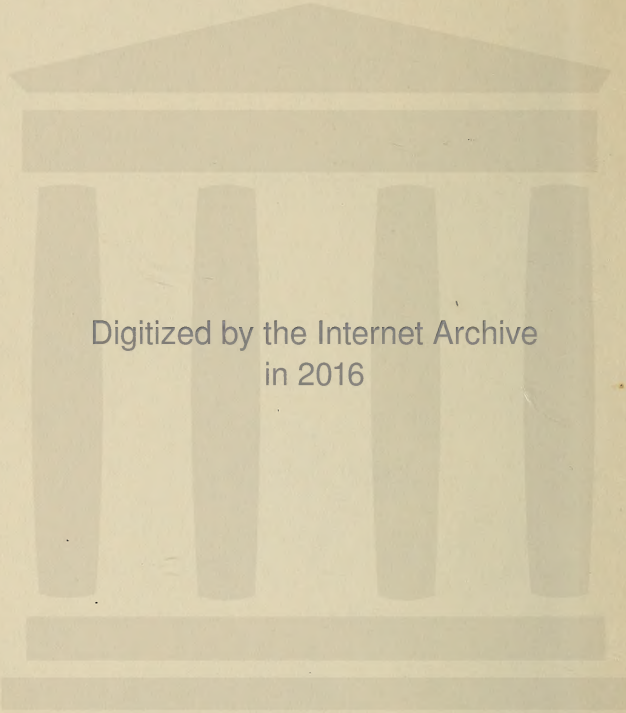


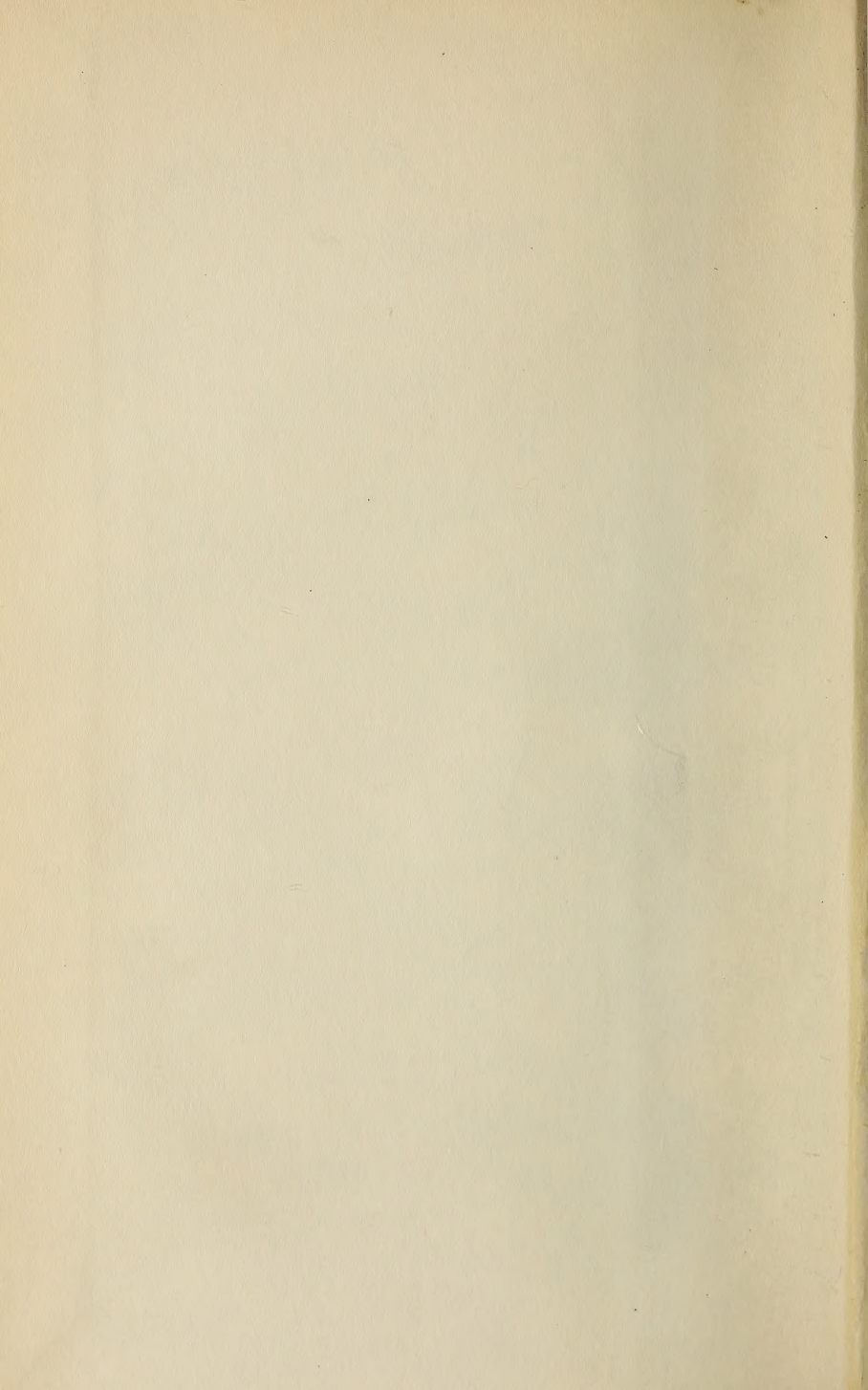


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MORPHOLOGY OF THE SKULL.*

By G. HOOPER.

MR. CHAIRMAN AND GENTLEMEN,—Morphology of the skull being an extremely wide subject, to give it the consideration that it merits in my paper to-night would be impossible. The points I propose to touch on are—The development of the human skull, the order of vertebrates, the comparison of the skull of the lower vertebrates with the human skull, and trace to a short extent the resemblance and then to pass on to consider a few of the forms of the human skull.

Briefly catalogued, the following are the elements distinctly developed in comparison with the bones so named in works on human anatomy.

Occipital=basioccipital, exoccipital, supraoccipital, interparietal.

Sphenoid=basisphenoid, alisphenoids, with external pterygoid plates and orbitosphenoids.

Ethmoid=mesethmoid, etethmoid, with proper superior, and inferior turbinals.

Inferior turbinals or maxillo turbinals, vomer, sphenoidal turbinals.

Parietals, frontals, nasals, lachrymals, premaxillaries, palatines, malars.

Temporals composed of several principal parts, squamosal (including zygomatic process), tympanic (including tympanic

* Read before the Students' Society of the Dental Hospital of London, November 12th, 1882.

ring, external auditory meatus, and post-glenoid process), and petromastoid (including prootic, epiotic, opisthotic), tympanohyal, stylohyal.

Malleus, incus, os orbicularis, stapes.

Inferior maxillary=dentary, coronary, splenial, mento-Meckellian.

Hyoid=basibranchial (body), ceratohyals (lesser cornua), first branchials (greater cornua).

The blastoderm or developing organ consists of three layers, the epiblast, hypoblast, and mesoblast; from the mesoblast are derived the muscles, bones, connective tissue, blood-vessels, and other structures, and it is by the aggregation of the cells of the mesoblast that a rod-shaped structure is formed, called the chorda dorsalis or notochord, and constitutes an axial cord and appears at an early date.

In studying the development of the cranium, we find in all cases that the primary elements of the cartilaginous brain-cases consists of two pairs arising beneath the matrix, from which the dura matter developes. (1) The parachordals posteriorly under the greater part of the hinder division of the brain, and (2) the trabeculæ of Rathke beneath the fore brain. Whatever cartilage appears subsequently in the brain-case grows nearly always in direct continuity with these elements by gradual chondrification of mesoblast. In this way a more or less complete cartilaginous box is formed, termed the primordial cranium. The notochord is attached to both the parachordals and trabeculæ. In the primordial cranium, cartilage can only be traced in the basilar parts, the extent, however, over which it extends in different animals is greater in many mammals than in man.

The brain-case having become cartilaginous, ossification commences about the seventh week of gestation in the basi-occipital element, then the exoccipital, supraoccipital, basisphenoid, alisphenoid, presphenoid, squamosal, and parietal, which, when completed, forms the osseous or brain-case.

In considering the bones which enter into the formation of the face, it will be necessary to see what structures there are in the head of an embryo of three weeks. We shall find an anterior cerebral vesicle or cerebrum, a middle cerebral

vesicle, and middle frontal process, superior maxillary process, the eye, and the first, second, third, and fourth visceral arches and clefts.

The middle frontal process is cartilage, and is formed by the union in the anterior division of the skull of the trabeculæ cranii; it has derived from it the nasal bones and the pre-maxilla, which is separate in all mammals except man.

The visceral arches and clefts are formed by a series of thickenings which arise on each side of the notochord. The usual number in vertebrates is three pairs:—1st, or mandibular; 2nd, or hyoid; 3rd, or branchial.

The superior maxillary process is a ridge running from the root of the first visceral arch on each side to the nasal sac, and has derived from it the maxilla and the palatine.

Though the ossicles of the ear are contained in the cavity of the tympanum, and are not included in the description of the skull, they are importantly connected in their origin with a number of other bones.

In each of the three first visceral arches a strip of firm tissue which becomes cartilaginous appears. The first strip is most perfect; it is divided into three parts, the proximal passes forwards some distance in contact with the basis cranii; it becomes ossified, and from it are developed the palate bone and internal pterygoid plate. The middle part forms the body of the incus and gives off two processes, the long and short processes of that ossicle. The remaining part, the largest of the three, is prolonged downwards to meet the fellow of the opposite side at the extremity of the arch, and is called Meckel's cartilage; the upper extremity of this cartilage forms the malleus, the handle of which is developed as a process directed backwards; the lower portion at first increases in size and forms a rod, on the external surface of which the lower jaw is formed; it can be seen on the internal surface of the lower jaw up to the eighth month of foetal life. The only permanent remains of the cartilage is the processus gracillus of the malleus, which has its extremity fixed in the Glasserian fissure.

The moieties of the mandible arise at first in fibrous tissue around the Meckellian cartilage, though Mr. Callender says,

in the 'Philosophical Transactions' for 1869, p. 163, that he has discovered a mento-Meckellian ossification of the cartilage at the symphysis, and there appear to be splenial and coronary elements on the inner side in addition to the dentary on the outside.

The axis of the second visceral arch becomes converted into the stapes above; below, into the stylo-hyoid ligament, and the lesser cornua of the hyoid bone, the body and greater cornua of which are developed from the third visceral arch. Between the stapes and styloid cartilage it is modified to form the stapedius muscle. A centre of ossification appearing in the styloid cartilage gives rise to the styloid process.

The circumstances which contribute most to modify the form of the human skull and the condition of its component bones, as compared with that of animals, are:—1st, the proportionately large size of the brain and the corresponding expansion of the cranial bones which enclose it; 2ndly, the small development of the face as a whole, and especially of the jaws, which brings the facial bones under the fore part of the brain-case instead of in front of it, as occurs in all animals with the partial exception of the anthropoid apes; and 3rdly, the adaptation of the human skeleton to the erect posture, which, as regards the head, is attended with a sudden bend of the basicranial axis at a considerable angle upon the line of the erect vertebral column, and along with this the advance of the occipito-vertebral articulation to such an extent as to make the head nearly balanced on the upper extremity of the spine. The downward opening of the nostrils, the forward aspect of the orbits and eyes, the nearly vertical forehead, the more or less oval-shaped face, are accompaniments of these human peculiarities in the form of the head which, together with those already mentioned, strongly contrast with the smaller cranium and the strong crests of bone, the large projecting face and jaws, and the other characteristic features of the skull in most animals.

Time will not permit me to enter into the development of the skulls of each vertebrate class, but there is a community of structure between the skulls of man and the lowest of the vertebrate series, viz. the fish, which persists throughout the

intermediate terms, while the differences between them will be more or less completely bridged over by the study of the skulls of the lower mammals, birds, reptiles, amphibians.

If we take the skull of a pike (an osseous fish), the lowest of the vertebrate series, and compare it with the skull of man, they will at first sight present the most striking dissimilarity to each other; the brain-case of the pike is relatively very small and much depressed, instead of presenting the capacious dome of the human skull, while, on the other hand, the facial apparatus is very large and complex, and its components are almost all moveable on the skull. Another circumstance which at once strikes the observer is that the lower jaw is not, as in man, articulated directly with the skull, but is connected with the latter by the intermediation of a complex suspensorial apparatus which articulates with the skull above and with the lower jaw below, but though apparently they are so dissimilar there is great fundamental resemblance between the skull of the pike and that of man.

In the early embryonic state of the pike there are, as in the human embryo (and in the embryo of all vertebrates up to a certain date), trabeculæ, parachordal cartilage, notochord, mandibular, hyoid, and branchial arches. Again, as in man, three pairs of chambers, destined for the lodgment of the organs of the higher senses, are placed symmetrically upon the sides of the pike's skull—the olfactory, the auditory, and the eye. Thus, the skull of the pike consists, as that of man, of an axis, of upper and lower arches, and chambers for the sensory organs.

We find in the brain-case of the fish, as in man, a posterior occipital segment, consisting of basioccipital, exoccipital, and supraoccipital; a middle parietal segment, consisting, as in man, of a basisphenoid, alisphenoid, and parietals; and, finally, an anterior or frontal segment. Of the bony elements connected with the sense capsules in man the pro-otic, opisthotic, and epiotic, together with the squamosal, have been clearly identified in the pike, as have the prefrontals and vomer. The bones which surround the mouth of the pike are disposed like those of man, above,

below, and behind the mouth, and enclose the buccal and pharyngeal chambers. The anterior pair of femoral bones are connected with the vomer, they obviously answer to the premaxillæ of man, an elongated bone is connected anteriorly with the preoral bone, which answers to the maxilla in man. We have now to consider what bones in the pike are equivalent to the postoral bones in man. The mandibular or hyoidean (or more strictly speaking, since the hyoidean arch is really composed of two, indicated by the greater and lesser cornua) : there are three postoral arches in man. In the pike the lower jaw forms a mandibular arch, obviously corresponding in a general way with that of man, behind this follows a second arch, answering to the styloid processes, stylo-hyoid ligaments, and lesser cornua of the human hyoid, but with much greater masses of bone entering into its composition; and this is succeeded by no fewer than five other arches, the four anterior of which, supporting the gill filaments, are called branchial, while the last pair, which carry no branchiæ, are much smaller than the others, are called the inferior pharyngeal bones.

In the pike the symphysis of the lower jaw is formed by the ligamentous union of two bones which carry the inferior teeth, and are called dentary; they correspond to the rami of the human mandible, but besides these dentary bones there are two bones in each half of the lower jaw which are not represented in the human lower jaw. One of these is a small bone which forms the lower part of the angular process of the jaw, it is termed the os angulaire or angular piece, the other is a large triangular bone which fits in between the dentary and the angular, and is termed the articular; according to Huxley this articular bone of the pike's jaw answers to the malleus of the man, and the quadrate bone of the pike, which articulates with the articular, corresponds to the sulcus of the man. Thus it has been proved that a certain fundamental resemblance exists between the skull of man and that of an osseous fish, the pike, both of which may be regarded as the extreme terms in the series of animals possessing a bony skeleton.

In viewing the different forms of the skull, there are three

methods we can adopt, those of Professor Camper, Blumenbach, and Owen. Professors Camper measured the profile by his celebrated facial lines, which consisted of two straight lines, one of which is to be drawn through the meatus auditorius to the base of the nose, and the other touching the prominent centre of the forehead, and falling thence on the most advancing part of the upper jawbone, the head being viewed in profile. In the angle produced between these lines may be said to consist not only of the distinctions between the skulls of the several species of animals, but also the distinctions which are found to exist between the different nations, and by the use of these lines a sort of scale has been established from the lowest vertebral fish to the most beautiful forms which are found in the human species. The angle becomes greater as the animal more nearly approaches the form of man. Thus, in the cold-blooded crocodile the facial angle is very small, the cavity of the brain in a skull three feet long will scarcely contain a man's thumb, almost all the skull is made up of the instruments for gratifying an insatiable propensity to slay and devour; it is the material symbol of the lowest animal passion. Then in the bird, such as the albatross, the facial angle is greater, the brain-case has expanded vertically and laterally, but is confined to the back part of the skull. In the small singing birds with short beaks, the proportion of the cranial cavity becomes much greater, which accounts for their producing such melody. Then in the dog, the facial angle is again greater, the brain-case with more capacity begins to advance further forwards. Then in the gorilla we find the capacities of the cranium and face are equal, and in man the cranial area vastly surpasses that of the face. A difference in this respect is noticeable between the savage and civilised races of mankind, but it is immaterial as compared with the contrast in this respect presented by the lowest form of the human head and the highest of the brute species. Such as it is, however, the more contracted cranium is commonly accompanied by more produced premaxillaries and thicker walls of the cranial cavity, as is exemplified in the Negro or Papuan skull.

In the dog the angle I have drawn is about 20° , and the gorilla about 40° , and the angle of the Australian skull is about 85° , while the angle discovered in the heads of Europeans is about 85° . On this difference of the degrees in the facial angle, the superior beauty of the Europeans depends. While that high character of sublime beauty, which is so striking in some works of ancient statuary, as in the head of Apollo, and in the Medusa of Sisocles, is given by an angle which amounts to 100° .

The observed range of ethnic variety in the configuration of the human skull, and proportions of its parts, is much more limited than in domesticated breeds of lower mammals, such as the canine races. Where much uniformity of manner of life, and of degree of mental power prevails, as in the Esquimaux, a certain constancy of cranial character is associated therewith, where difference of work and of social grade creeps in their cranial characters become inconstant. This is manifested, instructively, by extended comparison of the skulls of the wide-spread Polynesian peoples.

In the Australian the greater longitudinal and less vertical extent of the face, the produced jaws and receding forehead, the deep depression between the superorbital ridge and the shorter nasals, are the chief characteristics. The cranial walls of the Australian are very thick. These characters, which are constant in the Australian race, are far from being so in the European; and this difference depends on the comparatively uniform low intelligence and sameness in the mode of life of the savage as compared with the state of civilised man.

In the diminutive Boschisman race of South Africa, by some reckoned amongst the lowest of the aborigines of that continent, the cranium is flatter at the vertex and relatively broader at the parietal protuberances than in the Australian race, and the forehead, though low and narrow, is more prominent.

The cranium of the Hottentot resembles that of the Boschisman in the contracted but almost vertical forehead.

In a Negro from the Gold Coast of Africa the cranium is large at the parietal protuberances though narrow at the

forehead; the jaws are produced, and the cranial walls are thick, as in most West Coast Negroes.

The cranium of a Peruvian of the Inca race is short, broad, and high, especially behind, owing to the habit of carrying the infant with the back of the head resting upon a flat board, the pressure usually producing a slight unsymmetrical distension of the occipital parts of the skull. Then, again, in the race of Indians of the Columbia River called Flatheads, the cranium is deformed by the application of flattened boards to the frontal and superoccipital regions, occasioning a singularly depressed, broad, or side-bulging, subelongate form; but they resemble most other Indians in the large and almost flattened nasals being continued forward in a line with the glabella.

Most well-formed skulls of educated whites present the characteristics ascribed by Blumenbach to his Caucasian races. The contour of the cranium, as well as that of the face, is oval; the forehead is moderately vertical, high and broad, the nasal bones are prominent and well developed, the malars are vertical, and the orbital boundaries are neatly defined. The upper jaw is not produced; the lower jaw has the chin well marked.

The range of variety of skulls (European) is, however, considerable; there are:—Blenocephalic (or saddle-skull), conocephalic (or cone skull), brachycephalic (or short skull), dolichocephalic (or long skull), platycephalic (or flat skull), leptcephalic (or slim skull).

There are varieties in the degree of projection of the supranasal and supraorbital ridge, but never attaining that exhibited as a constant and specific character in the gorilla.

Having seen, then, that the same skeletal elements of the skull are developed in the lower vertebrates as are developed in man, and also having seen that as the animal approaches nearer to man there is a gradual expansion of the cranial bones, and of course a corresponding enlargement of the brain, we naturally ask ourselves, what are the mental powers of the lower animals. Some say that man is separated through his mental faculties by an impassable barrier

from all the brute creation, while Darwin, the great authority on the descent of man, denies that such a barrier exists, and says that animals may certainly be seen to pause, deliberate, and resolve; if that is so then reason is implanted in all animals by nature, but improved by education, logic, and philosophy in man, and so to enable him to fulfil his destiny, which is, to be the ruler of the earth, and to be the supreme head of the animal kingdom.

SOME REMARKS UPON THE EVOLUTION OF THE POISON-APPARATUS OF REPTILES.

By JOHN S. AMOORE, L.D.S. Eng.,

LATE HOUSE SURGEON TO THE NATIONAL DENTAL HOSPITAL.

THERE has been considerable stir lately in zoological circles at the discovery of a lizard possessed of poisoning powers as effective in their action as those of a cobra or rattlesnake, as previously all lizards had been considered harmless. Through the kindness of Mr. Geddes (Lect. Nat. Hist., Minto House, Edinburgh) I have lately had an opportunity of examining a specimen of this reptile, and as it is not without interest from a Dental point of view, a few words as to its appearance and history may not be out of place here.

Haloderma horrida is a native of Mexico, and is classified as an ordinary lizard, coming somewhere between the Lacerta and Monitor groups. It is, roughly speaking, about nine inches long, with a tail of an additional seven inches; to use a popular phrase it is an "uncanny" looking creature, covered with hard, nodular, bony scales of a dark colour, interspersed freely with patches of bright yellow. The specimen which I examined had been obtained with some considerable difficulty as it is now becoming extremely rare. It was somewhat injured, as the Mexicans hold the reptile in such dread that, if one is found it is almost stoned

and beaten to pieces. This is not a little remarkable as the same people will capture rattlesnakes, sew up their mouths so as to render them harmless, and then bring them into the towns to sell them. The lizard itself, if report is to be believed, is not unconscious of its own powers, for, unlike its brethren, it is not timid, but will turn about and face its opponent if attacked. There is no strongly differentiated poison fang, its teeth are small and evenly sized, though from all accounts they are each of them grooved. I had hoped to verify this by some sections, but an unavoidable delay has prevented their preparation.

Researches of a comparatively recent date have shown that the poison bag of the venomous snakes is simply a modified salivary gland, with which it is important to notice the mouths of lizards are usually plentifully supplied. In the dissection of *Haloderma*, Dr. Günther discovered that each tooth apparently possessed a poison gland in direct connection with it, an attempt had been made to verify this in the specimen I examined, but unsuccessfully. The virulence of the poison has been proved by direct experiment, the lizard was made to bite a frog and a guinea pig; the former died in one minute the latter in three.

There have been some interesting researches of late years into the nature of certain products of nitrogenous waste in the body. Some years ago certain poisonous substances, which were called ptomaines, were discovered in the putrefying bodies of animals. At this point the investigations were taken up recently by Dr. Gautier, who further discovered that these same ptomaines were being constantly formed in the normal healthy excretions of the living body, and were also present in minute quantities in most of the tissues, being in fact the results of the waste continually going on in them, their exact amount varying with the rapidity of the waste at the time. Dr. Gautier next made a careful examination into the nature of the venom of some of the highly poisonous snakes, one of which was a cobra; he found present an alkaloid which in all its properties closely resembled the ptomaines. He then examined some twenty grammes (three-quarters of an ounce) of human saliva,

obtained chiefly from the parotid gland, and by lixiviating and drying obtained a residue equal to about four grammes; this he redissolved in water, and injected a quantity beneath the skin of a small bird, the creature was almost immediately seized with trembling and exhibited symptoms very similar to those generally attendant upon snake-poisoning, it fell to the ground in a state of complete stupor which was terminated by death in about half an hour. In order to compare the results of snake-poisoning under like conditions, Dr. Gautier dissolved one milligramme ($\frac{1}{70}$ gr.) of the venom of the cobra in a little water, and injected this dose beneath the skins of some small birds such as the sparrow; death usually followed in five to twelve minutes, with the symptoms, first of torpor, then coma, then a period of excitation with convulsions and tetanic contractions.

The result of these researches is not without great interest, as affording a clue to the phenomena of hydrophobia; but apart from that, they throw a great light upon some of the steps in the evolution of that most wonderful and highly complicated mechanism, the poison apparatus of the venomous snakes.

THE LIMITATIONS OF DENTAL SURGERY.*

By THOMAS GADDES, L.D.S. Eng. and Edin.

MR. PRESIDENT AND GENTLEMEN,—The consideration of this subject, in its broad and comprehensive aspect, embraces the question—What is Dental Surgery? Every practitioner of that branch of medicine ought to be able to give an answer to that question. But, as yet, a complete definition has not been agreed upon, neither has one been formulated to meet with general approval. The question is, likewise, a difficult one to deal with, but that is no justification for avoiding it. It has also been considered an ethical question, but surely that is an erroneous application of the term.

* Read before the Odonto-Chirurgical Society, November 9th, 1882.

The question of the limitations of Dental Surgery is one that deals with the QUANTITIES of the several (medical) sciences embraced by Dental Surgery; it also deals with the RELATIONS of Dentistry as a sub-division of medicine to other sub-divisions of that parent subject—to know these is essential to its classification as a scientific speciality. Ethics, on the other hand, is the definition of conduct—"the adjustment of acts to ends." And before we can judge of the right and the wrong of all actions bearing upon Dental Surgery, we must first know what Dental Surgery is. Having formulated the quantities and the relations of Dental Surgery—having agreed upon its limits and classification—then, and not until then, can we have complete scientific data of ethics whereby professional conduct may be judged. Allow me to assure you that it is not my intention now to deal with ethics, though the data of professional ethics are based upon, and are an outcome of, the recognised relations of Dental Surgery.

I shall divide the subject thus:

1. That the subject is essentially and in every respect scientific.
2. The connection that Dentistry has with medicine, surgery, and materia medica.
3. The scope of Dental Surgery, as exemplified by—
 - a. The medical aspect of anæsthetics; of the treatment of neuralgia.
 - b. The surgical aspect of neuralgia; of the extraction of teeth; removal of the alveolar process; the treatment of chronic alveolar abscess; necrosis; the division and excision or removal of the gum, of polypi (tumours) of the gum and dental periosteum.
 - c. The use of therapeutic agents, constitutionally and locally.
4. Are the subjects enumerated as being on the borderland of general and special practice to be regarded by the profession as within the limits of Dental Surgery?
5. Is the education required of the Licentiate in Dental

Surgery sufficient to enable him to practise this branch of medicine?

1. That the subject is essentially and in every respect scientific.

The study of the limitations of Dental Surgery is one which deals with phenomena of a distinctly concrete kind; and these are physical and biological. In their totalities the concrete sciences cannot, as the term implies, be studied in the abstract; therefore, biological phenomena must be correlated with the physical. Physical science, as generally understood, includes the study of statics, dynamics, chemistry, heat, light, electricity, &c.; so that the principles of mechanical Dentistry, and also of the filling of teeth, are based upon our knowledge of physics. To the practice of the several sciences which take cognisance of those principles is added art, or skill, in performing or producing certain works, and thus is obtained an approximate locus and definition of those sections of Dentistry—of the science and art of Dental mechanics, and the mechanical filling of teeth.

The biological phenomena which Dentistry embraces are morphology, physiology, pathology, pharmacology—indeed, all that relates to our knowledge of diseases of the teeth and (shall I say?) of their contiguous structures. The study of the relations of those several component biological modes of force is essentially scientific, there is no art about it. How much, what quantities of the sub-sciences of medicine, surgery, and materia medica shall be embraced in the study of Dentistry as a speciality, is a question, likewise, essentially scientific—the premises of the question are terms which deal with concrete phenomena, and therefore it cannot be anything else than a scientific question; yet a much-respected member of the profession has, by implication, stated to the contrary.* If Dentistry is to be regarded as a sub-division of the parent subject—medicine—a definition of its relations to other sub-division is also essential to its classification as a scientific speciality. At the present time such a definition is wanting; the limitations of Dental Surgery are left to the

* 'Transactions of Odontological Society of Great Britain, vol. xiv (April, 1882), p. 142.

lamentable uncertainty of tradition, the variability, fallacy, and nescience of the incoherent ideas of individual practitioners.

Dentistry, therefore, is a science and an art, and the study of its quantities and relations—its limitations—a scientific study.

2. The connections of Dentistry with medicine, surgery, and *materia medica*.

That such connections do exist requires, I think, but little argument—they are self-evident. Therefore, I shall briefly state that, considered as a science, medicine takes cognisance of all that relates to our knowledge of diseases—of the circumstances under which they arise, their conditions of existence, the nature of their causes and their treatment. Surgery—the primary division of medicine—has for its object the cure or relief of certain morbid conditions of the body. But the line of demarcation between the ordinary practice of medicine and of surgery is somewhat arbitrary, conventional, and indefinite. *Materia medica* is that branch of medical science which treats of the remedies (or medical materials) employed in the prevention and treatment of disease.

In the every-day treatment of diseases of the teeth, operative (surgical) means and the use of drugs (medical materials) are resorted to. In these respects, apart from any other considerations, is Dentistry connected with the parent science—medicine.

3. The scope of Dental Surgery.

In endeavouring to ascertain what are the quantities of the collateral branches of medicine that Dental Surgery includes, I shall, at the outset, quote a most highly distinguished and esteemed member of the profession. In the last edition of Gant's Surgery,* the special chapter on Dental Surgery is written by Mr. Chas. S. Tomes, F.R.S. He writes thus: "There is a borderland between the provinces of the general and of the Dental Surgeon, with which, both for the welfare of the patient and the credit of the practitioner, it is important that each should be familiar. . . . The space devoted to Dental Surgery will, there-

* 'Science and Practice of Surgery.' By F. J. Gant, F.R.C.S.

fore, be most usefully devoted to this common ground." This includes dentigerous cysts, odontomes, abscess of antrum, diseases of gums and alveolar processes, neuralgia, &c. The study, knowledge, and treatment of these diseases, which are here spoken of as being on the borderland of special practice, may also be regarded as supplying indications of the limits of Dental Surgery.

The administration of anæsthetics is daily and very largely undertaken by Dentists. In the 'Transactions of the Odontological Society of Great Britain,' vol. xi, p. 6, *et seq.*, there is recorded some experience of the personal administration of anæsthetics by Messrs. John Tomes, Barrett, Underwood, Woodhouse, Browne-Mason, Hunt, Dennant, Sewill, Walker, and others, all men who are regarded as in the foremost rank of the profession—practitioners and teachers of Dentistry. Indeed, I believe it may be truthfully stated that a large majority of Dental practitioners use such agents; and so general has their employment of late years become, both in hospital and private practice, as a supply of a public demand, that the administration of anæsthetics is now regarded as embraced by Dental Surgery. The Dental licensing bodies recognise this fact. At the examinations for the Dental diploma of the Royal College of Surgeons of England written questions upon the action of anæsthetics have been given on different occasions. It is known, too, that similar questions have been given at the *viva voce* Dental examinations of the several licensing corporations. In the relation existing between Dental practice and the administration of anæsthetics, we should not fail to remember that it was a Dentist—Horace Wells—who first discovered modern anæsthesia; and numerous improvements in their preparation and administration, particularly of nitrous oxide, have been suggested by Dentists. Neither should we overlook the introduction of the combination of nitrous oxide and ethedine dichloride by a much esteemed member of this Society. The whole history of anæsthetics is intimately connected with Dental Surgery.

The treatment of neuralgia comes within both the practice

of the physician and the sphere of the surgeon. In the former case it is treated solely by medicinal agents, while in the latter operative interference, along with the administration of drugs, are frequently the lines of procedure. Dr. Bristowe* says that "in a large number of cases . . . we can, so far as general treatment is concerned, only deal with them empirically." That the treatment of neuralgia, when associated with the fifth cranial nerve, does fall within the limits of Dental Surgery, there is very substantial evidence to show. As I have already stated, Mr. Charles S. Tomes includes neuralgia in the list of subjects with which he deals in the Dental section of Gant's Surgery. So, too, in the text-books on Dental Surgery, chapters are devoted to the causes, pathology, and treatment of neuralgia. This is the case in Tomes's 'Dental Surgery;' Salter's 'Dental Pathology and Surgery;' Coleman's 'Dental Surgery and Pathology.'

Likewise, in the Dental department of general hospitals have the Dental Surgeons appointed thereto in many instances treated cases of neuralgia. One case of "Intractable Facial Neuralgia," which is recorded in 'St. George's Hospital Reports,' 1878, was so treated by the removal of a horizontally impacted canine tooth. Considerable pain followed the operation, and morphia injection was administered, cure following within twenty-four hours. We also read of the operation (Gross's) of cutting down to and removing a portion of the edentulous maxillary bone to relieve acute nerve pain. This has been done by Mr. Coleman;† and at the Dental Hospital of London, Mr. F. Canton‡ adopted a modification of that operation when internal remedies had failed. Mr. Charles Tomes§ has resorted to nerve stretching and nerve excision in the treatment of neuralgia of the dental nerves. At this juncture I venture to reiterate that this malady is treated not by sur-

* 'Theory and Practice of Medicine.' By J. S. Bristowe, M.D., &c.

† 'Manual of Dental Surgery and Pathology.' By Alfred Coleman, F.R.C.S. &c., p. 335.

‡ 'Journal of British Dental Association,' vol. iii, p. 516.

§ 'Transactions of Odontological Society,' vol. xii, p. 171.

gical interference only, but also by the use of therapeutic agents.

The conclusion which the foregoing observations, which, if it were necessary, could be considerably augmented, leads up to is that the treatment of neuralgia, medically and surgically, is regarded by many high authorities as coming within the sphere of Dental Surgery.

The ordinary operation of tooth extraction need not now occupy attention, but I shall make a few remarks upon the surgical aspect of the more difficult operation of removing impacted teeth and roots. Incising the gum and cutting away a portion of the alveolar process, with either trephine or other instrument, in order to dislodge an impacted or buried root, is unquestionably a Dental operation. The removal of portion of the ascending ramus of the lower jaw to facilitate the extraction of an impacted molar; also the extraction of a diseased tooth through an external sinus, are operations that have on different occasions been resorted to and performed by Dental Surgeons. Such operations necessarily involve a relatively considerable amount of surgical interference and after-treatment.

(To be continued.)

ON THE TROPHIC CHANGES IN THE ALVEOLAR BORDERS OF THE JAWBONES IN LOCOMOTOR ATAXY.

By P. J. THOMSON, M.R.C.S. Eng., L.R.C.P. Lond.,
OF BRUSSELS.

ATTENTION was first drawn to the changes in the maxillæ as one of the symptoms of the advanced stage of locomotor ataxy by Dr. Vallin in a communication to the Société Médicale des Hôpitaux in July 1879. Since that time a few cases of this kind have been published, but we are indebted to French observers for a full description of these alterations, and quite recently Dr. Demange, of Nancy, has given us most valuable post-mortem reports of the changes found in two of his cases.

The subject is one of great interest, and especially to the Dental branch of the profession, both from the importance of the parts involved and from the hitherto absolutely negative results of any kind of medication in this affection.

The following typical case from Dr. Damas Chino's wards at the Hôpital Laennec was lately reported in the '*Gazette des Hôpitaux*.' The patient is a man, aged forty-four, and the disease appears to have commenced about twelve years ago, with occasional pains in the back and loins and very slight difficulty in walking. He served during the siege of Paris and was quartered in one of the damp outlying forts. To this he attributes the violent rheumatic (?) pains he suffered at the time. He now could walk with ease on the flat, but found it almost impossible to come down a sharp incline. For the next two years he enjoyed perfect health.

Towards the early part of 1874 he began to feel some numbness in some of the fingers of the left hand; soon afterwards he noticed his hands get cold in the most unaccountable way, and in cold weather always felt pins and needles in his fingers. About this time he commenced to suffer from lightning-like pains in his legs and thighs, and also at intervals of several days paroxysms of pains in the front part of the chest close to the sternum, lasting usually three days. For several years afterwards he remained in much about the same condition. He still had the lightning-like pains in the lower limbs, and three or four times a year these pharyngo-œsophageal gastric pains. He could walk pretty well during the day, but in the dark he tottered and was obliged to cling to any object about him so as not to fall.

Two years ago, on the 1st of January, one of his upper incisors, a perfectly healthy tooth, fell out spontaneously without any pain and without any loss of blood. Another one was shed in the same way about a fortnight afterwards. Soon one of his left molars became loose and came to lie almost parallel with the border of the maxilla, which had its alveoli deeply grooved by absorption at this spot. The tooth had been in this condition for some weeks when, on the 20th of July of last year, he found he was unable to control the

movements of his right leg. He tried to stand, but his leg gave way, and he fell to the ground. Ever since he has been unable to stand.

When he was admitted to the hospital his hands and feet were always cold, but that condition changed and was replaced by one of hot sweating.

At the time of the report the patellar reflex was lost on both sides. There was a loss, but not total, of cutaneous sensibility about the body and limbs. The anæsthesia which, according to the patient, was well marked in both feet, while the limbs were cold, has disappeared since the sweating set in. On the face, on the left side, where the jaw is deformed and the teeth have been lost, there is not the slightest loss of sensibility. But on the right side there is analgesia and hyperæsthesia over almost the whole region supplied by the fifth nerve. The prick of a pin is felt only slightly but radiating over the whole side of the face.

This case may be taken as an example of the more chronic form of dental alterations in locomotor ataxy; others run a much more rapid course, and the changes seem to be more profound. Dr. Vallin's first patient lost all his teeth in both jaws in the course of a twelvemonth, and the upper maxilla was reduced to a triangular stump with the base backwards, but without any opening into the antrum. His gums had always been perfectly healthy and his teeth good. The mode of shedding was similar to that in the above-narrated case. The tooth came away quite painlessly, but usually two days afterwards the patient was able to remove a piece of bone shaped like a paper screw, externally studded with small holes and enlarged vascular canals. This was the inner part of the corresponding socket. In Dr. Vallin's second case, a man aged forty-five, all the teeth were lost in a similar manner, and the horizontal branch of the lower jaw was reduced to a rounded stalk of the thickness of a little finger. There were in addition advanced changes in some of the muscles of the body, partial atrophy of some of the facial muscles, and paralysis of the soft palate.

A noticeable feature in most of these cases is the apparent absence of any change in the articular surfaces of the lower

jaw. Absorption of the condyle with consequent partial displacement of the jaw had been noticed and described by Professor Charcot, but the trophic changes in the alveolar borders and the accompanying loss of teeth do not seem to have been met in conjunction with it.

What are these changes due to?

Dr. Demange gives the answer to this question in the reports of two of his autopsies. In his first case sections of the trifacial nerve, close to its exit from the pons Varolii, showed that numbers of nervous bundles were sclerosed, the white substance or myeline had disappeared, and the axis cylinders were choked in a bed of connective tissue, strongly staining with carmine; other nervous bundles were healthy. There was, therefore, in this case, a sclerous neuritis of the trifacial nerves, with atrophy of the nuclei at their origin.

In the second case both trigeminal nerves were much atrophied at their exit from the pons; the left one more especially was reduced to a thin gelatinous filament that was hardly to be recognised. The Gasserian ganglion on the same side was very much diminished in size, looked quite empty, and reduced to a flattened vitreous sheath of connective tissue, without the semblance of any nervous substance. This patient had, during life, anæsthesia and analgesia of the left side of the face in the whole region supplied by the fifth nerve; the teeth had also been lost on this side.

In both these cases the sclerosis of the posterior columns of the cord extended, without any break, to the bulb through the floor of the fourth ventricle.

These peculiar alterations are therefore to be ascribed to sclerotic changes in the nuclei of origin of the trigeminal or sensory nerve of the face and jaws.

OCULO-DENTAL DISEASES, OR MALADIES OF THE EYE CAUSED BY DENTAL IRRITATION.

By Dr. GALEZOWSKI, M.D., Paris.

(THE continuation of this paper is obliged to be postponed until next issue.—Ed.)

DENTAL SURGERY A HUNDRED YEARS AGO.

By FELIX WEISS, L.D.S. Eng.

(Concluded from Vol. XXV, p. 1194.)

AN ordinary reader might be led to believe that there is little to be gained by repeating exploded theories and fallacious modes of treatment, yet it should never be forgotten that the exposure of error goes a long way towards the appreciation of truth, and that many of the absurdities that found credence in the early days of science led the way to some of our most important discoveries. Thus it is that too much attention cannot be paid while writing on the Dental profession to early modes of surgical treatment, more particularly those advocated at the beginning of the eighteenth century, when Dentistry was first recognised as a special science.

On the various methods of cleaning the teeth we find many startling observations. "Most people," says Mr. Tolver, "use small brushes, or bits of cloth or linen, without any suspicion of their impropriety, for they are much too rough and often ruin the gums and teeth." The same author's objection to scaling has been alluded to, and he further says:—"It is very probable that, by endeavouring to detach this matter (tartar), some of the enamelled part of the tooth, may be taken away with it. If it should be said that this matter *may be* removed without any such danger, a brief repetition of the nature of the disease will, I hope, prove a sufficient answer." After some further description of the disease, he continues:—"Now, suppose the operator ever so dexterous he must expose the neck of the tooth bare and liable to all injuries of the air, but when left to itself, the tartar seldom fails of dropping off insensibly. A certain merchant in the city," he adds, "I saw three months after this operation and he had lost all his teeth but two."

Dr. Hoffman enters upon the same subject with the same views, and as he considers that the teeth receive their nourishment from the gums, "this tartar, by reason of its acridity, eats into the substance of the bone, enlarging the

pores, but it can be easily removed by rubbing it with spirit of salt." Continuing with some very learned observations upon the causes of caries, he enters into the treatment to be adopted, and we have here the first mention made of anything that can be likened to a modern filling. He considers "that this corruption of the teeth is irremediable by any skill or treatment whatever, for there is no restoring to soundness what is once corrupted and mortified; still care may be taken to stop the spreading of this corrosion and save the tooth from being utterly consumed, for it does not end here, but pursues its devastations from tooth to tooth. The only remedy which I have found to answer by frequent experience is to insert little pieces of lead exactly shaped to fill the cavity. By this simple and easy expedient I have known teeth preserved for many years. The lead, by its alkaline quality, corrects, tempers, and even alters the acrid cadaverous sanies." He also enters into a description of the cautery to burn the membrane which is the seat of sensation, and he tells us that this operation is attended with neither pain nor danger, and observes that this is preferable to oil of vitriol or aquafortis, so injurious to the texture of the teeth and jawbone.

I cannot conclude this branch of the subject without making some allusion to the various remedies recommended for the cure of toothache. Dr. Hoffman says that "a poultice of bruised garlic laid on the elbow will raise little bladders and assuage the pain. An ointment of eight cantharides, three roots of garlic spread on linen and laid on the elbow, is also a sovereign remedy which has surprising effects in toothache." And for young children he recommends "the pulp of quinces with the yolk of an egg dissolved in rose water and syrup of violets; or better still *hare's brains*, which practitioners account a most admirable specific."

Dr. Hoffman's greatest horror appears to have been cold, "which is pernicious to the teeth, the nerves, the brain, and the spinal marrow. I strongly advise every one to abstain from cold things, and the author Forrestus is so cautious against admitting the air that he would have the patient not to sleep with his mouth open, to speak little, and always to

use warm water in washing the mouth." Hoffman considers smoking tobacco also a good cure, but it hastens the destruction of the teeth, and he condemns dentifrices altogether, particularly "*calcined flints and corals.*"

Extraction was never advocated at this period of Dental history, and, indeed, it was very seldom considered necessary, "being of no manner of service when a concretion of foul humours has overrun the neighbouring region, and is little necessary when toothache proceeds from caries, as the pain may be prevented. There is also danger in drawing out the canini on account of their deep and broad roots, to which is annexed a nerve issuing through an aperture in the orbit, thus inflammation of the eyes and violent headache may be the consequence." Another quotation showing the objection made from a very early period to the extraction of teeth is not without interest. "It was a particular injunction of God in the Mosaic law that the servant whose teeth the master had struck out should be freed. And the ancients used to hang up a leaden pair of pincers in the Temple of Apollo to show that teeth should never be drawn until they were so loose that they would come out with a leaden instrument."

Dr. Hoffman believed that it was very dangerous to extract teeth at all, and the molars particularly, of the upper jaw, as the bone might suffer, and he gives a long history of a case where a lady of distinction, through an extraction twelve months ago, had a "defluxion of matter into her mouth." Her rank enabled her to consult several eminent physicians, professors, and surgeons, who believed it to be an ulcer, but Dr. Hoffman explained to her that by the forcible extraction of the tooth her upper jaw was damaged and the cavern described by Highmore laid open. He said to her that a cure was impracticable, and that her case neither admitted of a surgical operation nor internal treatment. He prescribed the close stoppage of the cavity with lead to keep away the air, and by frequently snuffing up *Balsamum vitæ* his patient got rid of her ailment. Comment upon such treatment is hardly needed, but it shows how little was known of Dental Surgery, even of the simplest kind, at this period. Mention is made in this book of cases of trans-

plantation, and of one lady of title who had a sound tooth drawn from her woman to fill her own empty socket, but that the tooth ever took root the worthy doctor does not believe.

No allusion is made by Mr. Tolver to artificial teeth of any description, but Dr. Hoffman remarks that "when the teeth fail and the dental substance is exhausted, no medical skill can raise a new set, but art has invented ivory teeth as an expedient to supply the defect of nature. These serve only for speech and ornament, and being of no use in mastication they are so contrived as to be taken out in eating time."

From these extracts the reader will gain a very vivid picture of the condition of the Dental art in 1752—3. Throughout the two volumes there is hardly a deduction that can be depended upon, hardly a fact that has not been misinterpreted, or a treatment that common sense, without any special knowledge, could not upset, although we have every reason to believe that both these authors considered themselves far in advance of the age in which they lived. After the perusal of such dissertations we have every reason to be satisfied that "the true causes of these several disorders" are at the present day known, and that we can now offer such advice and treatment as will preserve the Dental organs in a healthy condition.

ANNOTATIONS ON ANÆSTHETICS.*

By SAMUEL OSBORN, F.R.C.S.,
ANÆSTHETIST TO ST. THOMAS'S HOSPITAL.

(Continued from Vol. XXV, p. 1187.)

WHEN ether (sp. gr. .720, manufactured by Messrs. Burgoyne, Burbridges, and Co., of Coleman Street) is to be given by Clover's portable regulating inhaler, two ounces of

* Reprinted from pamphlet, with author's notes of experience to present date.

ether—this amount being equal to the contents of the small tin porringer placed in each box—will be found sufficient to commence with. For if the patient struggle a larger amount will overflow and allow of the liquid ether escaping into the inhaling tube. After the lapse of ten to fifteen minutes the amount may be replenished by another half porringer full, and later on, if the operation be a long one, by another half porringer; but four ounces will generally be found sufficient for the longest operation. Should this amount not be used the cylinder should be thoroughly emptied and refilled prior to the commencement of each operation. Care must be taken that the sides of the india-rubber bag are not adherent to one another at the insertion of the cylinder, for without the air passes freely to and from the bag the patient is longer in coming under the influence.

If the mouth-piece of this inhaler is applied to the face without the india-rubber bag and with the index of the cylinder at o, the vapour of the ether is hardly at all perceptible and the patient is brought gradually to its effects. First, by the introduction of the bag to its place, and so on, until the index points to r.

The reason for this is that the volatility of ether is so great that some amount of the vapour cannot fail to escape through the chinks of the reservoir, although it is to all purposes closed and the index at o.

When the patient has been rendered thoroughly insensible, the index may be turned back to q, at which spot it may remain during the remainder of the operation.

Care must be taken that some ether is kept continually in the reservoir, and consequently, the stopper must be occasionally removed to see that the supply has not been exhausted. A glass stopper with a hollow ball top would allow of this being seen without its being necessary to remove the stopper.

Ether of .720 sp. gr. is better than .735 as it combines better with chloroform and has less tendency to produce hyperæmia of the bronchial passages. Four parts of ether to one of chloroform is a very useful combination for eye or

rectal operations, which require more profound anæsthesia. An improvised inhaler may be well contrived out of an inverted soda-water glass, in the bottom of which is placed a sponge covered by a napkin; the latter, coming over the rim of the glass, is folded backwards on the outside.

Persons of great strength, also heavy drinkers, take a larger amount of the anæsthetic to produce unconsciousness than others, therefore no definite statement of the amount required can be made. To anæsthetists of short experience the stage of excitability is generally an anxious one; the patient is not thoroughly cognisant of what he is doing, and may refuse to have any more of the anæsthetic, or to have the operation performed at all. If this occurs the patient must be forcibly restrained, and the anæsthetic pushed. This is, of course, more difficult in private administrations, but must nevertheless be done, the patient not being responsible for statements made after the anæsthetic has been once commenced.

It is well to throw a towel over the upper part of the face and head of the patient, to effectually prevent any entrance of air; it also necessitates the patient keeping his eyes closed, and is useful at the same time for removing from the mouth the saliva which is secreted in so large an amount by the inhalation of ether. Thus administered, the discomfort and danger of taking anæsthetics is, I believe, reduced to the lowest minimum; for, with one hand always on the pulse and with an eye always on the respiration, any alteration in one or the other is at once taken notice of. But *neither ether nor any other anæsthetic is absolutely safe*. The inhaler should be occasionally raised, as any blueness of the face, with lividity of the lips or pallor of the face, are premonitory signs which the chloroformist must take into account, and regulate the administration accordingly.

Clover's gas and ether inhaler (Messrs. Mayer and Metzler) has become now the favourite apparatus for the administration of anæsthetics in several of the London hospitals, its mechanism being so constructed that it lies in the power of the administrator to give first nitrous oxide gas alone, then a combination of gas and ether, and finally ether alone.

The advantage of quieting a patient preparatory to the giving of ether, by the administration of a few inspirations of nitrous oxide gas, is so very slight that the usefulness of this inhaler is seriously counterbalanced by the increased cost of the instrument and its greater cumbersomeness, compared with Cloyer's portable regulating inhaler. Another advantage stated in its favour is that no ether is wasted, it being unnecessary to empty the cylinder after each operation, but only to close the stop-cock. But comparing the small amount of ether now required by either of Clover's inhaler's in comparison to the large amount *wasted* by the use of other apparatus, this need hardly be mentioned, and taking into consideration the cost of nitrous oxide gas, the expense of the administration far exceeds the saving in ether. Another point in favour of the portable inhaler is the larger graduated scale for the regulation of the volume of ether to be administered.

(To be continued.)

Reflections from the Surgery.

REFLEX IRRITATION CAUSED BY DENTAL CARIES.

Case reported by C. VINCENT COTTERELL, L.D.S.,

DENTAL SURGEON TO ST. BARTHOLOMEW'S HOSPITAL, ROCHESTER.

L. A. R—, female, aged $8\frac{1}{2}$ years, consulted me, about nine months ago, on the condition of her teeth, and during the examination I noticed a violent twitching of the muscles of the right side of the face. Her relatives informed me that the patient had suffered with these spasmodic contractions for about four years, each attack only lasting about two minutes, but being followed by a loss of speech. There was at times contraction of the muscles which drew the right corner of the mouth downwards and at others upwards. The outer angle of the eyelids also participated in the spasm,

and frequently the head was drawn towards the right shoulder. I also noticed a great prominence of the temporal muscle, which produced a violent contraction of the lower jaw. These attacks have usually taken place once weekly, and from time to time she had received treatment without relief. I found the teeth were generally healthy, caries existing only in the first and second right temporary lower molars. As she stated that there was a sense of discomfort in the side of the jaw, directly under the carious teeth, lasting about a day before the spasm took place, I deemed it advisable to remove them. Two days afterwards the patient had another spasm, the worst that had occurred, but repeated inquiries since that time have proved that it was the last, which clearly shows that the teeth had produced irritation of a nature which acted on the cerebral nerve centres.

THE 'Glasgow Medical Journal' gives the following account of the relief from pain in a malignant tumour of the tongue and mouth by the division of the gustatory nerve by Dr. Renton:

J. C—, æt. 37, was admitted into the Western Infirmary on 13th August, suffering from malignant disease of the left side of the tongue and floor of the mouth. A portion of his tongue was removed some months ago by Dr. Buchanan, but the disease returned to the floor of the mouth and involved the glands, so that it was impossible to remove it. The pain and salivation were so distressing that it was decided to divide the gustatory nerve. This Dr. Renton did, by the method recommended by Moore, as follows:—"Enter the point of a curved bistoury into the mucous membrane of the mouth, three quarters of an inch behind and below the last molar tooth, and cutting down to the bone the nerve must be divided."

Immediate relief to the pain and salivation followed, and the patient was able to sleep with comfort.

On inquiring about this patient, in the middle of October, he states that he has had no return of the pain on that side.

British Journal of Dental Science.

LONDON, JANUARY 1, 1883.

THE season of festivities which has just passed cannot altogether by its brilliancy have obscured from our view the existing sufferings of the poor. When in the midst of gaiety, our attention being diverted from the ordinary routine of every-day life, some incident is sure to bear down upon us and show plainly that misery, sickness, and want abound to such an extent that it behoves every one to make it his duty to render all the assistance that lays in his power to counteract such painful influences.

No one can deny that the medical profession with its branches is the most benevolent of all bodies, and the wealthy public show their appreciation of the gratuitous services of the surgeon and physician by contributing the funds necessary to afford shelter and food to the victim of disease whilst undergoing the treatment necessary to effect a cure. It may rightly be called an art divine, for what work can be higher than the amelioration of human suffering.

In estimating our share in this, we must turn to the records of cases treated at our Dental hospitals, and now that forty years have elapsed since the first London institution for diseases of the teeth was established we can without difficulty prove their usefulness.

In Windmill Street, Tottenham Court Road, about the year 1840, Mr. Edwin Saunders and Mr. W. Harrison offered gratuitous assistance to the suffering poor by superintending a dispensary for diseases of the teeth, and for five years this little institution did good work. What led to its discontinuance is not generally known, but it ceased to exist after that time.

A period of ten years elapsed before any attempt was

made to establish another, and after a great deal of political excitement two Dental hospitals were founded, the present London Dental Hospital and that which now bears the name of the National Dental Hospital, its former title being the Metropolitan School of Dental Science. Our journals have each month shown what has been done at these places, so it only remains for us to point out the increase during the last twenty years. We find that in the year 1862 there were 10,520 cases treated at the London Dental Hospital, and 2222 at the National Dental Hospital, and for eleven months only of the year 1882 there is the extraordinary number of 36,056 cases treated at the London Dental Hospital and 21,655 at the National Dental Hospital, making an estimated grand total for the year 1882 of 62,000 cases treated at our two metropolitan Dental schools. Such figures cannot fail to prove the value of such places. It must be admitted at the same time that although the poor obtain relief, the profession obtains the benefit for educational purposes. How should we succeed in making first-class gold fillings but for the patient who is willing to endure the additional inconvenience of the untrained hand? Constantly watched as the student is by the visiting surgeons there is no fear of a patient being put to unnecessary pain. Our surgeons guard the patient jealously against unnecessary suffering, the student being led from the case of the greatest simplicity to the most difficult.

Our remarks apply with equal force to the provincial schools which are being ably conducted by esteemed members of the profession. In dispensing for the poor there is always the liability to meet with fraud, and perhaps there are more cases found at the Dental hospitals than at other institutions. Every reasonable precaution is taken, but the difficulties which are in the way render the discrimination between the really poor and those able to pay a small fee almost impossible. Dress and education may without doubt be taken as no guide at all, for what income has the milliner's apprentice to devote to Dental services. In many instances she has none at all, and in others but a few shillings, she may at the same time be decently clad and

possess certain refinement of speech. An opposite view will show a man who comes hurriedly into the waiting room from the neighbouring bakehouse with his clothes besmeared with flour, the porter asks him what his business is, and he says a baker's man, though his income may be between two and three pounds a week. This, of course, we cannot get at, his clothes and brusqueness will naturally stamp him as of the lower order, and in all probability make him eligible for the benefits of the charity.

In the face of our arguments we cannot but hope that all who are in any way connected with our Dental hospitals, whether subscribers, surgeons, or students, will attend gratuitously to those only who are really unable to pay a small fee. Without wishing to bring down the dignity of our calling, we cannot but remember that as our younger men enter the profession they have to compete with those who are known to fame, and therefore class should work for class, that is, the notorious for the rich and the tyro for the poor. With a uniform education at our Dental schools, and a determination to follow the principles we suggest, we cannot but think that good results will follow.

CORRECTION OF THE DENTISTS' REGISTER.

WE would earnestly call the *immediate* attention of such members of the profession as have changed their address since the publication of the last 'Dentists' Register' to the requirements of Section XII of the 'Dentists Act (1878),' which in effect requires that every registered Dental practitioner should be careful to answer, without delay, all inquiries sent to him by the Registrar of the General Medical Council, and also to send the Registrar immediate notice of any change in his address, in order that the *correct address* may be duly inserted in the Dentists' Register, otherwise, by Section XII of the Dentists Act (1878), such practitioner is liable to

have his name erased from the Dentists' Register, and thus, by Sections III and V of the said Act, to lose the right "to take or use the name or title of Dentist (either alone or in combination with any other word), or of Dental practitioner, or any name, title, addition, or description implying that he is a person specially qualified to practise Dentistry," and also the right to recover, in any court of law, "any fee or charge for the performance of any Dental operation, or for any Dental attendance or advice."

Unless they attend, *without a moment's delay*, to this necessary condition for enabling the Registrar to produce a *correct* Register for 1883, some of our readers will, we fear, through their own neglect, find themselves dis-registered in the immediately forthcoming edition of the 'Dentists' Register.'

All such alterations or corrections should be sent to the Registrar, W. J. C. Miller, Esq., Medical Council Office, 299, Oxford Street, London, W.

BENEVOLENT FUND.

WE are heartily glad to see that at last the British Dental Association is about to grapple with the arduous task of attempting to form a Dentists' Benevolent Fund. That they realise the magnitude of the undertaking is evident from the boldness of the figures set forward, viz. "a capital sum of £5000 and a subscription list yielding £250 per annum. Large as these amounts may appear at first sight, they are not more than ought easily to be furnished by the profession as a *whole*, but we fear that certain expressions in the third and fifth paragraphs in Mr. J. S. Turner's letter (which will be found on page 48) are calculated to restrict subscribers to members of the Association *only*. If this were so it would, in our opinion, be a fatal mistake. It would be simply asking the members to give £10 each and subscribe 10s. per annum, a request which, however willing they might be to assist the deserving, could never be acquiesced in.

We believe the Committee is quite right in saying "recipients of aid need not be members of the Association," but consider it wrong and suicidal to add "but in *all cases* the members of the Association or their dependents shall have a preference."

We quite fail to see why one class of subscribers should have any preference over another, and feel sure the fund will be better supported if the *preference* is given to the most *necessitous* and *deserving* cases arising amongst subscribers indiscriminately.

We have too long and urgently pointed out the necessity of such a fund to render it necessary for us to say that any scheme for carrying it out on a truly liberal and equitable basis will receive the heartiest sympathy and warmest support that our pages can offer.

Nothing could much more forcibly point to the necessity of a properly organised fund than the result of the appeal recently made for Mrs. Ashenhurst in this Journal, and most kindly supported by both our contemporaries, the 'Journal of the British Dental Association' and 'The Dental Record.' Notwithstanding this generous help, that also of the leading Dental depôts, and the gratuitous collections made by several practitioners, it has taken FIVE MONTHS to raise sufficient funds to enable the object of the appeal even to be attempted.

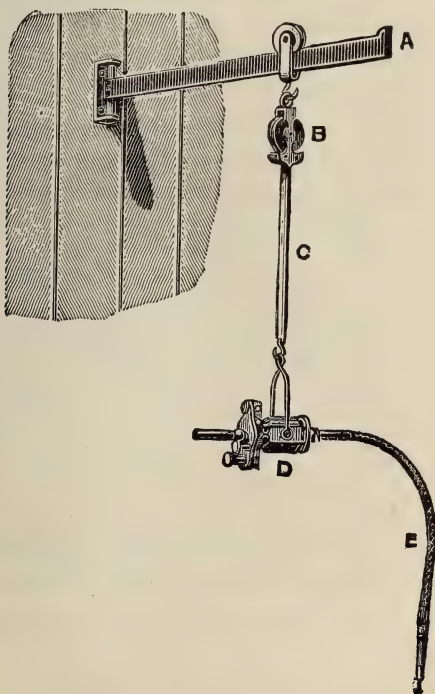
Had the help arrived promptly—as a settled fund could have advanced it—it would have practically been of nearly double its present value. For coming in slowly as it did the young widow and her five little children could not be allowed to starve pending the assistance that we rightly judged would not be grudged them; therefore what little she could earn by needlework and otherwise, during the time left free from her domestic cares, had to be supplemented from the funds during those five months sufficiently to enable them to exist; thus unavoidably wasting money and deferring the time when she could be enabled to support herself and family.

Manipulative Miscellany.

All instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month, they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits, and without any intention or wish to pit one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

ELECTRO MOTOR FOR DENTAL ENGINE.

THESE machines, which have now been in use for some time, continue to give great satisfaction, and where motion



is required for a considerable time, such as when the automatic mallet is added to the engine, they are extremely

useful. It must fall to the lot of an electrician to describe the details correctly. Our experience has been that it works with considerable speed, and the batteries which are needed, although strong, are not likely soon to get out of order. Those we had ours attached to were three large (standing twelve inches high) bichromate batteries, and the duration and working power left nothing to be desired. The Dental Manufacturing Company, who are the sole agents, will give such information about the batteries that our experience must not be taken as the only means of obtaining the power.

IMPROVED LAMP WITH REFLECTOR.

MR. J. RITCHIE has introduced a lamp somewhat after a well-known pattern which commands attention. The chief value in it is that gas or paraffin can be used at will. Rising from a heavy metal stand is a rod which serves to hold the lamp and reflector. Midway is a useful table from which can be detached that portion of the rod which holds the lamp. The reflector is made of looking glass divided into sections, and has a variety of movements easily controlled. The lamp, which for gas simply consists of an ordinary branch, is further provided with a strong screw which will receive a duplex paraffin lamp. This addition is easily made, and the entire apparatus, having extensive movements in addition to the double lighting power, is a sufficient evidence of its usefulness.

WE have received from Messrs. Ash and Sons a sample of tin cylinders which we shall have much pleasure in reporting on in our next issue.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

ORDINARY MONTHLY MEETING, HELD 5TH DECEMBER, 1882.

S. LEE RYMER, Esq., L.D.S., President, in the Chair.

THE minutes of the previous meeting having been read and confirmed,

THE PRESIDENT called on Mr. Hutchinson for his casual communication, which was the exhibition of the head of a rabbit which had been discovered on the estate of the Duke of Wellington, and showed that at some period the animal's jaw had been broken, and the articulation of the incisors disarranged, thereby causing an extensive growth of all the teeth, some directed outwards and others inwards. He also brought before the Society an upper molar, which had been presented by a member to the Society's museum, where the patient had suffered with an alveolar abscess.

MR. BRUNTON then exhibited a new process for hardening vulcanite in Campbell's celluloid apparatus. Its feature was in embedding the vulcanite in steatite or soap stone, commonly known as French chalk, instead of plaster of Paris, it being contended that the vulcanite deteriorated when in contact with plaster of Paris.

MR. GEORGE PARKINSON, for Mr. Parkinson, of Bath, handed round a model of the upper jaw of a man with the following history:—Eight years ago the patient, a butler, suffered with alveolar abscess in an upper molar which extended into the antrum, the tooth was extracted and relief obtained. A few weeks ago he again consulted Mr. Parkinson to ascertain the cause of a bony growth which was appearing in the place where the former tooth was extracted, and appeared to come from the antrum. The man had seen Sir James Paget on the subject, and he communicated with Mr. Parkinson, who found the growth to be a tooth, which ultimately Sir James requested Mr. Parkinson to remove. The opinion expressed was that the tooth had been lying in the floor of the antrum and had been erupted after the removal of the previous tooth.

MR. REDMOND showed the model of an upper jaw with two supernumerary teeth standing. The teeth had been

extracted and were handed round. He also explained the use of the new anodyne "Eugenol," prepared from oil of cloves, and stated he had found it obtunded sensitive dentine better than any known agent.

Mr. COLEMAN mentioned a case in his own practice where a child had erupted the permanent central incisors at the age of four years and six months.

The PRESIDENT now called upon Mr. OAKLEY COLES to open the discussion on Dr. Carpenter's paper on "Some of the Causes which lead to Dental Caries," read at the previous meeting, which was followed by Messrs. WOODHOUSE, SEWILL, REDMOND, Dr. WALKER, HENRY, and HUTCHINSON.

At a quarter to ten the PRESIDENT said he had the power to prolong the meeting, and would call upon Mr. CHARTRES WHITE for his paper on the "Salivary Glands of Insects," which being read, he appointed Dr. Coffin and Mr. F. Henri Weiss auditors of the Treasurer's accounts for the current year.

The meeting was then adjourned until January 8th, when the following officers will be balloted for:

President.—Dr. Joseph Walker.

Vice-Presidents.—(*Resident*), Charles S. Tomes, Esq., Henry Moon, Esq., *T. Chartres White, Esq. (Non-Resident)* Walter Campbell, Esq. (Dundee), William Doherty, Esq. (Dublin), *J. T. Browne-Mason, Esq. (Exeter)*.

Treasurer.—James Parkinson, Esq.

Librarian.—Felix Weiss, Esq.

Curator.—S. J. Hutchinson, Esq.

Honorary Secretaries.—T. F. Ken Underwood, Esq. (Council), J. H. Mummery, Esq. (Society), *Claude Rogers, Esq. (for Foreign Correspondence)*.

Councillors.—(*Resident*) Alfred Coleman, Esq., J. Stocken, Esq., Isidor Lyons, Esq., George A. Ibbetson, Esq., Ashley Gibbings, Esq., *Thomas A. Rogers, Esq., J. Smith Turner, Esq., F. Canton, Esq., Alex. Cartwright, Esq. (Non-Resident)* William Fothergill, Esq. (Darlington), Martin Magors, Esq. (Penzance), *R. Rogers, Esq. (Cheltenham), W. Hele, Esq. (Carlisle), A. Wilson, Esq. (Edinburgh), R. White, Esq. (Norwich)*.

NOTE.—The names in the preceding list printed in italics are those of the new Officers and Councillors recommended for election.

ODONTO-CHIRURGICAL SOCIETY.

ORDINARY MEETING, NOVEMBER 9TH, 1882.

JOHN SMITH, Esq., M.D., F.R.C.S.Ed., President, in the Chair.

THE minutes of the Annual Meeting having been read and confirmed, it was intimated that the Council had, in terms of Rule V, clause 3, deleted the name of William Percival Robertson, 124, Crown Street, Aberdeen, from the roll of membership.

David Cormack, 77, Margaret Street, Cavendish Square, London, L.D.S. Eng., was then nominated for membership.

The paper of the evening was read by Mr. Thomas Gaddes, L.D.S., on "The Limitations of Dental Surgery," a portion of which we have reprinted in our present issue.

An animated discussion followed, in the course of which Mr. CROMBIE said he thought Mr. Gaddes had not paid sufficient attention in his paper to the consideration of the surgical status of the Licentiate in Dental Surgery. A fully qualified surgeon practising Dental Surgery might of course perform any operation, and would be protected by his diploma against any contingency that might arise. Did the licence in Dental Surgery afford equal protection to its holder? He thought it was a matter of great importance to determine this point before incurring any responsibility beyond that which ordinarily attached to a Dentist.

Mr. WILSON thought that although in the present transitional state of the profession it might be difficult to lay down the exact limits of Dental Surgery, still after a time a tolerably well-marked boundary would show itself. One point of limitation they undoubtedly had in the fact that it was quite incompatible with his ordinary practice for a Dental Surgeon to take up cases the after treatment of which involved his visiting the patient; and this inability would not only tend to deter him from undertaking the treatment of doubtful cases, but would also compel him to call in a general surgeon in all cases when serious complications unexpectedly showed themselves.

Mr. FINLAYSON said he hoped the day would come when Dental Surgeons would be capable of operating on any case that might occur in their practice, but he was of opinion that, during the present generation of Dentists, for obvious reasons which need not be further referred to, only purely dental operations should be performed by the Dentist, and that operations of the major and more serious sort, such as

were referred to in Mr. Gaddes' paper, should be relegated to the surgeon proper. The use of constitutional remedies, such as the prescribing of an alterative, or any other simple matter of that sort, was, he thought, not only allowable but absolutely called for when needed. The Dental Surgeon of the future would occupy a much higher position as regards medical and surgical knowledge, and would also be a man of greater culture than the average Dental Surgeon of the present day; then would be the time to agitate this question.

Mr. G. W. WATSON agreed for the most part with what Mr. Gaddes had said in his paper with regard to the scope of Dental Surgery; he thought it quite within the province of the Dental Surgeon to undertake operations for the treatment of dentigerous cysts, odontomes, and affections of the antrum consequent on the presence of diseased teeth. But in the case of tumours he thought it would be well for Dental Surgeons to confine themselves to the simple non-malignant varieties, and more particularly to those having a dental origin.

Mr. BIGGS thought that Dental Surgeons ought to be *able* to perform all operations connected with the oral cavity, whether they actually undertook such cases or not; and that the ability of the operator should be the only limit to the operations of the Dental Surgeon in his proper capacity.

Dr. WILLIAMSON said that the extreme view of what a Dentist should be qualified to perform was that put forward by Professor Garretson, of Philadelphia, who thought that every Dentist should be an "oral" surgeon, and should undertake the performance of all operations, however formidable, on the tongue, lips, upper and lower jaws, &c. Now, such an extension did not seem to be justifiable, as the ordinary dental routine was incompatible with the performance of operations which might place life in jeopardy, and which would necessitate a constant out-door attendance for their after treatment, so that such cases were necessarily much better left in the hands of the general surgeon, who also, from his ordinary experience, would be much better qualified to cope with such emergencies as might arise. As a whole, then, it was evident that the limitations of Dental Surgery were not so much the limitations of anatomy as they were those suggested by expediency and common sense.

The CHAIRMAN (Dr. Smith) then said that, if no further remarks were to be made, he had taken some notes on the importance and interesting communication by Mr. Gaddes, and on the discussion following it, which he would now offer the Society previous to bringing this subject to a close. But before doing so, he felt sure that he was only express-

ing the unanimous feeling of the members present when he said that Mr. Gaddes deserved their most cordial vote of thanks. The position of the Dental Licentiate, and the extent of his privileges and field of practice—as compared, on the one hand, with the practitioner who had no legal qualification whatever, and, on the other, with those who, in addition to their skill and acquirements as Dentists, possessed also a full medical or surgical diploma—was, he said, a subject presenting several points not easily disposed of without mature and deliberate consideration. The inquiry of this evening seemed to resolve itself into the endeavour to obtain a correct and specific definition of the meaning and extent of what is termed “Dental Surgery,” and of the kind and the range of practice to which the diploma of Dental Licentiate was supposed to entitle its possessor. It had been set down by the highest legal authority in England that the designation of Surgeon, as an affix or prefix, might be assumed by any one who chose to take it—a deliverance which, to all intents and purposes, implied that the word Surgeon had no meaning at all. This might be so, but up to the time of this very learned interpretation of the term it had been generally accepted, in reference to practitioners of the healing art, as one showing that they held some recognised surgical qualification. It might, no doubt, be the case that any one might affix the word to his name in the same way that any one might affix the word reverend, or captain, or admiral, or professor; but it was quite a different matter when he acted upon the strength of such designation. And in any case where he might have to produce the right and title he had to such a designation, the reverend gentleman, or the captain, or the admiral, or the professor might, in some unexpected and awkward situation, when discovered not to be what he led the general public to believe he was, find himself exceedingly apt to get into trouble. The Dental Licentiate, however, he held as quite entitled to assume the prefix or affix of “Surgeon;” and unless the word had no meaning at all, such Licentiate was, as a special Surgeon, legally qualified, entitled to practise the healing art in certain, if not all of its departments. No doubt it was to those Dentists possessing no legal qualification that reference was made, in the decision alluded to, respecting the title of Surgeon Dentist, and whether or not the assumption of it was strictly justifiable, according to a correct interpretation of the law, it would have been perhaps invidious, on the establishment of the new licence in Dentistry, to make a retrospective erasure of the title by which these older practitioners had been so long known. But the difficulty

under consideration this evening was not the general import of the term "Dental Surgeon," "Surgeon Dentist," "Licentiate in Dentistry," &c., as a legal guarantee to practise a certain amount of Surgery; but it was to define the exact limits within which the practice of such Licentiates, &c., must be confined. Now, there seemed to be no actual line of demarcation possibly to be laid down here. The practitioner's own discretion—first, in the knowledge of his own ability, of what he ought to, and what he could conscientiously undertake; and, secondly, the bearing in mind of what a jury might think of his having done so—would always be the principal guiding circumstances to be considered. There was no doubt that a limit had been intended to be exercised in the case of the Dental Licentiate's sphere of practice. That limit might be, and doubtless was, vague enough. There was a borderland on which he might encroach; but, in doing so, he incurred a responsibility. There was a boundary to his field of practice somewhere; but that somewhere he had been left to find out for himself, and accept the result. The whole responsibility, in fact, had been thrown upon his own judgment in the matter. Any encroachment, however, on this undefined borderland by the Dental Surgeon would assume a very different aspect, according to circumstances; and it might be fairly said, in a general manner, that wherever the treatment of a case had been commenced in circumstances ordinarily falling to the care of the Dentist, its treatment to the end, the treatment of complications arising in connection with it, and even of certain conditions in the general health of the patient, apart from the original disease, but occurring during its progress, might be legitimately undertaken by the judicious Dental Surgeon. It is unnecessary to say here, however, that a judicious practitioner would not exceed his prerogative, but would call in the assistance of the Physician, or General Surgeon, as soon as ever he thought this necessary or even becoming. It was here that the Dental Surgeon's qualification differed from that of the Surgeon-Accoucheur, the Surgeon-Oculist, the Surgeon-Aurist, or the Surgeon-Specialist, of other kinds, properly so called. These last were fully qualified practitioners, with their special acquirements and experience superadded to this. Such specialists ranked not with but above the ordinary practitioner, and deservedly so. They had superadded to his studies, and examinations, and degrees, the labours, the knowledge, and experience required to master some special subject; and it might so happen that some day the Dental Surgeon would, like them, be the Surgeon, who had added to his general

qualification a clear and luminous and comprehensive knowledge of and ability to treat his own specialty, and would take the same high position as the practitioner who devoted himself to diseases of the brain, the heart, the lungs, eyes, ears, kidneys, and other special departments of medicine. But until that time came it would not do for the Licentiate in Dental Surgery to undertake, *ab initio*, some case unconnected with the teeth. It was open to question whether even such cases as diseases of the jaws, palate, tongue, oral mucous membrane, or nerves, if unconnected with the teeth, would fall under Dental Surgery. And unless, for example, a tumour of the jaw, even connected with the teeth, appeared of such a nature as to afford a prospect of cure by some strictly Dental operation, it was difficult to say whether a mere Dental Licentiate would be justified in undertaking its treatment. Such cases, as had been already said, generally required the surgeon to visit the patient, and not the patient to visit the surgeon; and where a number of patients and a number of visits of the kind fell to the Surgeon Dentist, it was more than could be expected that his Dental practice, properly so called, would not suffer by it; and it was more than likely that full justice could be done to neither of the cases falling under his care as a Dentist pure and simple, or as a special Surgeon. It might be predicted, however, that these difficulties would yet be met, and the problem solved, possibly by a still further specialisation of Dentistry—the Dental Surgeon becoming less of the Dental mechanician, and the mechanician less of the surgeon, and both assuming a higher status and greater perfection in their respective departments. Or possibly, under the changes foreshadowed in the Report of the Royal Commission on Medical Education, the colleges and other licensing bodies might be deprived of the powers of granting any diplomas as absolute qualifications for practice, but be restricted to conferring them merely as what might be called special badges or professional honours, obtainable only by those who had previously passed the General Examination of a conjoint Central Board; so that in this way practitioners of every denomination would at least possess a uniform qualification upon which any further diplomas or degrees might be based. The question, Dr. Smith remarked, was a large one; and the whole profession he considered indebted to Mr. Gaddes for bringing it forward this evening as he had done.

Mr. GADDES, in reply, said he was glad the subject of his paper had been received so favorably by the meeting, and especially did he appreciate the remarks of their distinguished President. The objections that had been made to a Dental

Surgeon ordinarily performing such operations as those he had mentioned, might be resolved into a question of convenience. If it were not convenient for the Dentist to visit his patients, or to receive several visits, he need not undertake work that involved such treatment. He was pleased to learn that the removal of tumours of the gum and alveolar process was practised not only in the Dental departments of general hospitals and in the Dental hospitals of London, but also in the Dental Hospital of Edinburgh, and also that anæsthetics—nitrous oxide, nitrous oxide and ethedene dicloride, and chloroform—were administered by the regular staff of Dental Surgeons. He would impress this fact upon the Society, namely, that in his paper he had not made any definite statement of his own as to the limits of Dental Surgery; but he thought that, having instanced examples of what had been done under the pale of Dental Surgery, the conclusion to be drawn was inevitable.

Some interesting cases and specimens having been brought before the Society by Messrs. Wilson, Biggs, and Watson, the President stated that at the next meeting (December 14th) a paper would be read by Mr. Wilson, on "The Classification of the Teeth in the Mammalia," and adjourned the meeting.

STUDENTS' SOCIETY OF THE DENTAL HOSPITAL OF LONDON.

ORDINARY MEETING, NOVEMBER 15th, 1882.

CORNELIUS ROBBINS, Esq., L.D.S. Eng., Vice-President, in the Chair.

THE following gentlemen were elected Members of the Society:—Messrs. Leason, W. R. Ackland, G. W. Trott, R. Fairbank, Parkinson, Stainer, Brewster, Crocker, and Pattison.

The following gentlemen were proposed for membership:—Messrs. Magendie, Gralriel, and Mundell.

Casual communications:—W. H. H. Tester, L.D.S., Skull of bird having the lower bill of abnormal length affecting the left side only; Mr. W. Hern, M.R.C.S., L.D.S., four-fanged wisdom tooth; Mr. G. Hooper, skull of dog; Mr. A. M. Fox, model.

The CHAIRMAN then called upon Mr. G. Hooper for his paper (see p. 1).

The following gentlemen took part in the discussion:—The Chairman, Messrs. Newland Pedley, M.R.C.S., L.D.S., W. Hern, M.R.C.S., L.D.S., J. Patterson, M.R.C.S., and A. H. Tester, L.S.D.

Dental News.

DENTAL HOSPITAL OF LONDON, LEICESTER SQUARE.

THE Annual Dinner of the Past and Present Students of this Institution took place on the 2nd inst. at the Freemason's Tavern, when covers were laid for one hundred gentlemen. The chair was taken by Mr. James Parkinson, who was supported by Mr. Edwin Saunders, Mr. Thomas Rogers, Mr. Samuel Cartwright, Mr. Underwood, Mr. Hepburn, and Mr. Coleman. After a well-served repast "Grace" was sung by a well-organised choir, composed of several members of the profession, including Mr. David Hepburn, Mr. Arthur Underwood, and Mr. Alfred Smith.

The CHAIRMAN, in proposing the health of the Past and Present Students, said it gave him great pleasure to meet so many old friends and associates, representing the work of the hospital for the past five-and-twenty years, and to see men around him whom he had known as students, but who were now themselves teachers and lecturers. Present students should appreciate highly the advantages now at their command, as compared with the state of things which existed in his own student days; but at the same time the requirements were higher, and no doubt it required some amount of industry and perseverance to get through all that had to be done.

Mr. STEWART HEPBURN having responded for the Past Students, and Mr. BUCKLAND for the Present, Mr. OAKLEY COLES proposed the toast of "The Dental Hospital and Staff," in a speech which was received with much laughter and applause, concluding by saying that the Dental Hospital of London had outgrown its premises in Soho Square, and it bade fair before very long to outgrow also its limits in Leicester Square. He would not venture to say what it would do then, but he had no doubt its resources would be equal to the emergency, and that it would grow to greater eminence and greater usefulness.

Mr. MOON, in replying, alluded to the great loss the hospital and the profession at large had sustained by the death of Mr. Clover.

Mr. CARTWRIGHT, in proposing "The London School of Dental Surgery and its Lecturers," said that having himself been one of those who instructed pupils in old times, he

could sympathise with those who now undertook that duty, and could, at the same time, assure the pupils of the great advantages they now enjoyed.

Mr. CHAS. TOMES, in responding for the lecturers, complained that it was difficult to assume a proper tone of modesty, and yet to admit on behalf of his colleagues, if not of himself, that the compliments which had been paid them were really deserved.

Mr. SAUNDERS proposed the health of the chairman, who was, he said, intimately connected with all the chief institutions of the profession, and a consistent supporter of them all. He was one of those who were largely endowed with that form of practical wisdom called common sense, and in any position of doubt one could seldom do better than follow his lead. Long might he continue to direct and advise.

But the great event of the evening was the presentation of a testimonial—a handsome ormolu carriage clock in case, subscribed for by the students of the hospital—to Mr. Claude Rogers, on the occasion of his resigning the post of Demonstrator of Gold Filling, which he had held for nearly five years. The presentation was made on behalf of the students by Mr. R. H. Woodhouse, who remarked that Mr. Rogers had not only been one who taught well, as a master of his art, but one who taught so kindly and patiently as to win the esteem of all. It might be taken as a proof of his skill in teaching that a gentleman had been selected as his successor who owed all he knew to Mr. Rogers; concluding by saying:—"In the name of your late pupils I present you with this clock, as a token of the high esteem in which you are held by them, and of their appreciation of your skill as an operator."

Mr. ROGERS, in reply, thanked the donors for the way in which they had shown their appreciation of his services. He had tried to assist them to the best of his ability, and they, on their part, by the steady way in which they had received his instructions had made his work a pleasure.

Mr. David Hepburn provided a programme of vocal music with his usual success, a very amusing selection from Sullivan's "Trial by Jury" being especially well received.

DENTAL HOSPITAL OF GLASGOW.

THE Annual Meeting of the Staff of the Dental Hospital of Glasgow was held on Wednesday evening, the 15th inst.,

in Anderson's College Buildings, Mr. W. S. Woodburn. L.D.S., in the chair. The Secretary and Treasurer's reports having been submitted to the meeting were considered very satisfactory. The work of the hospital had been efficiently carried out during the year and the number of patients located showed an increase of 464 over the corresponding period of last year.

VACANCY.

DENTAL HOSPITAL OF LONDON.—Dental Surgeon. Applications by January 8th, 1883.

APPOINTMENT.

MR. WILLIAM B. BARROWS has been appointed Honorary Dental Surgeon to the Vale House Orphanage, Everton, Liverpool.

THE ASHENHURST APPEAL.

WE are requested by Mrs. Ashenhurst to express her heartfelt gratitude to those gentlemen who have, so far, enabled her to tide over her time of sorrow without absolute want and place her in a position of hope for the future, and we ourselves think it only fair to them that they should know what they have enabled to be done in her behalf.

She has been enabled to take a small house near the Victoria Docks, and to sufficiently augment her household furniture, &c., to let furnished apartments to the officers of the merchant ships during their stay in docks. She has an aunt who makes a very good living in this manner, and thought under her family circumstances it a more feasible plan than a retail business, especially as the funds were so limited.

So far well, but we would earnestly remind the generous and feeling-hearted of our profession that the good work is not completed, that a few more pounds are required to support the bereaved family whilst connection is formed, and that possibly the first quarter's rent may require to be defrayed for her; if, however, ASSISTANTS generally would

but spare one shilling to her cause, our work would be completed.

We again earnestly beg practitioners to ask their assistants to do this (as some few have kindly done), and forward the amounts to us.

We have to acknowledge the further sums :

	£	s.	d.
Mr. Spenser Cockings (Louth)	0	5	0
Per the Dental Manufacturing Company :			
M. W. 2/6 ; P. H. 2/6 ; J. M. 2/6 ; J. H. J. 1/-	0	8	6

Further subscriptions will be received by Messrs. C. Ash and Sons, the Dental Manufacturing Company, Mr. Rutterford, Messrs. W. and J. Jamieson, and the Editor of this Journal.

THE PROPOSED BENEVOLENT FUND.

THE following letter from Mr. Turner has been sent to the Members of the British Dental Association :

British Dental Association ;
40, Leicester Square, London, W.C.

DEAR SIR,—It is proposed to establish a Benevolent Fund in connection with the British Dental Association on the following basis :

The fund to be managed by a standing committee of the Members of the British Dental Association, who shall inquire into and decide on the merits of each case brought before them. Each case, whether relieved or not, shall be considered strictly confidential, and any help afforded shall be made privately.

The recipients of aid need not be Members of the British Dental Association, nor being Members of the British Dental Association need they be subscribers to the fund, but in all cases the Members of the British Dental Association or their dependents shall have a preference.

It is considered that a capital sum of £5000, and a subscription list yielding £250 per annum, ought soon to be attainable, thus permitting the distribution of substantial relief to many deserving cases.*

It is beyond the limits of a preliminary circular to enter

* A capital sum of £5000 invested at 5 per cent. would yield £250, and an additional subscription of a like amount would admit of £20 per annum being paid to twenty-two cases, and leave a small margin for casual cases and expenses.

into further details of organisation, but in the event of the Representative Board receiving sufficient encouragement from the Members of the Association to justify the necessary expenditure, a provisional code of laws could be drawn up, and a copy sent to each member, and then submitted to the next general meeting for amendment or adoption.

Will you kindly state on the accompanying form the amount you are prepared to give as a donation to the capital fund, and the amount per annum you will give as a yearly subscription, and return it to me.

Yours, &c.,

J. S. TURNER, *Hon. Sec.*

MONTHLY REPORT OF CASES TREATED AT THE DENTAL HOSPITAL OF LONDON.

FROM NOVEMBER 1ST TO NOVEMBER 30TH, 1882.

Extractions	{ Children under 14	335
	{ Adults	799
	{ Under Nitrous Oxide	465
Gold Stoppings.....		249
White Foil ditto		11
Plastic ditto.....		734
Irregularities of the Teeth treated mechanically.....		149
Miscellaneous Cases.....		219
Advice Cases.....		159
Total.....		3120

W. F. CORNELIUS,
House Surgeon.

MONTHLY REPORT OF CASES TREATED AT THE NATIONAL DENTAL HOSPITAL.

FROM NOVEMBER 1ST TO NOVEMBER 30TH, 1882.

Number of Patients attended	1401
Extractions { Children under 14.....	309
{ Adults.....	619
{ Under Nitrous Oxide	78
Gold Stoppings	32
Sheets of Gold used, independent of Pellets.....	34
Other Stoppings	247
Advice and Sealing	129
Irregularities of the Teeth	46
Miscellaneous.....	287
Total	1747

FRED. WM. BATE,
House Surgeon.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 82, Mortimer Street, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
3. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
4. All communications relative to subscriptions and advertisements are to be addressed to the Publisher, Mr. J. P. Segg, 82, Mortimer Street, Regent Street, London, W.
5. The Journal will be supplied direct from the office on PREPAYMENT of subscriptions as under:

Twelve Months (post free) 14s. 0d.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skiros, 82, Mortimer Street, Regent Street, W. A single number sent on receipt of seven (penny) stamps.

ANSWERS TO CORRESPONDENTS.

"H. B."—All *poisons* must be dispensed by registered persons only according to the Act. Very many things that are poisonous are supplied by the oilman, so that we fail to see your object in the inquiry.

Communications have been received from the Odontological Society of Great Britain, J. Ritchie (London), W. C. Grayston (Paris), Felix Weiss (London), C. Vincent Cotterell (Rochester), W. Hulsmann (Stockton-on-Tees), William Burrows (Liverpool), "H. B." (Great Yarmouth), Walter Harrison (London), G. Hooper (London), Edward Latchmere (London), Fred. Bate (London), W. F. Cornelius (London), Gilbert Walker (London).

BOOKS AND PAPERS RECEIVED.

'British Medical Journal.' 'Lancet.' 'Medical Times and Gazette.' 'Pharmaceutical Journal.' 'Chemist and Druggist.' 'Progrès Dentaire.' 'Kingstown Dental News.' 'Ohio State Journal.' 'El Progreso Dental.' 'American Journal of Dental Science.' 'New England Journal of Dentistry.' 'L'Art Dentaire.' 'Journal of British Dental Association.'

NOTICE.—We desire that it may be clearly understood that our pages are open to all for free expression of their views on matters connected with our profession. We only ask for terseness of expression and MODERATION IN TONE.

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THE SALIVARY GLANDS OF INSECTS.*

By T. CHARTERS WHITE, M.R.C.S., and L.D.S. Eng.

So many papers on subjects appertaining to our branch of surgical science have been brought at various times under your notice, and have been so fully and carefully treated, that those who come after find not only great difficulty in choosing a theme that has not been well-nigh worn threadbare, but have often felt compelled to go out of the rightful and legitimate domain of Dental Surgery, and to enter on that of Dental mechanics, to find a theme upon which to base their thesis. I am in that position to-night: every branch of our special department has been fully worked out in previous papers, our every-day treatment of those diseases of the mouth which are our peculiar care has been discussed at our meetings and improved for the general good, and I therefore find the ground cut away from under my feet by those pioneers who have gone before. In these days of hard work it is not easy to find the time necessary for original research; that must be left to the younger and more vigorous members of our fraternity, those who have the time, the talent, and the opportunity. While bearing in mind that this is a society taking especial cognisance of the oral anatomy and physiology of the human subject, I ask your permission, in the absence of more important matter, to bring under your notice one or two of those instances in comparative anatomy which, while not bearing directly on our daily duties, should

* Read before the Odontological Society of Great Britain, Monday, December 4th, 1882.

possess an interest for every intelligent practitioner of our art.

I have placed under my microscope this evening the salivary glands of the cockroach (*Blatta orientalis*), a creature whose abundance as an inhabitant of our metropolitan kitchens affords every facility for investigation, and of which opportunity I have not been slow in availing myself. It is my wish to call your attention to one or two details in reference to the anatomy of these glands, and to take a passing glance at two other types readily presenting themselves for examination without much trouble. Time will not allow of an exhaustive treatment of the glands of insects generally, but after having seen those brought under notice this evening, I hope it may tempt my younger brethren to tap the source of an infinite variety which cannot become stale by closer contact with it.

Before entering upon a consideration of this highly interesting subject, I would call back to your minds, if needful, the general plan on which the salivary glands are constructed, the use of the saliva in the preparation and assimilation of the food, the forms of some of the salivary glands met with in insects, and finally describe the complex yet beautiful arrangements in the salivary glands of the cockroach.

In the formation of a secreting gland the first element necessary to the proper performance of its function is that there should be a free surface from which the secretion can be discharged, and in the next place the blood from which the secretion is eliminated should be brought into intimate contact with this surface: these are the primary factors which, through the medium of the secreting cells, perform the process of secretion; all the remaining forms and conditions are as mere adjuncts. This arrangement may be observed in its greatest simplicity in the secreting surfaces of the body being mucous, serous, and cutaneous surfaces furnishing well-known examples; but when it is necessary to condense a secreting surface, then it is we meet with those various forms of glands providing a large surface if expanded, but occupying a contracted area in the situation

in which they are required, and where an extended surface would be inadmissible. This condition gives rise to great variability in the forms of glands; this variation of the shapes of salivary glands would furnish sufficient material for a very long paper, but I can only briefly indicate a few of the types of the general arrangement of them in the insect world, leaving it to others to work out more fully this almost inexhaustible mine of anatomical wealth. In departing from the plain secreting surface, nature adopts various expedients for getting this increase of surface with the least encroachments on space, retaining the efficiency of the glandular function while concentrating the dimensions of the gland, and in doing so presents two methods, one being the protrusion of glandular processes from the surface, the other by an inversion of the secreting surface. As examples of the first method I may quote the synovial fringes of the knee-joint, which secrete the fluid, the choroid plexuses of the brain, and other such like instances met with in the animal structure; but they are not so numerous as the second modification, that by inversion: this may be met with in every degree, from simple inverted tubes or follicles, such as abundantly stud the mucous membrane of the stomach and intestines, to the elaborate racemose glands of the parotid and pancreas. Passing by the part played by the secreting cells in the function of salivary secretion, which is well known to you all, and bears more on the physiological aspect of this subject than on its anatomical, I may just say that the salivary secretion is a fluid of some complexity, whose principal and most important constituent is, as you are all aware, a substance termed *ptyaline*, a substance which possesses the property of converting innutritious into nutritious food; you are well acquainted with one of these properties, that of converting starching materials, which of themselves are innutritious, into sugar which is a nutritious food: for this reason it plays a very important rôle in the animal economy. In the herbivorous insects we find a great development of the salivary glands, while in the carnivorous they are comparatively insignificant; but the saliva has also another office to perform, that of supplying solvents for

moistening and softening food, and it will be as well to bear these two points in mind in the examination of the salivary glands under notice this evening. In no class of animal life can the advantages of concentrating an extended secreting surface within a small compass be better seen than in the insecta: for in them—the principal part of the thorax being occupied by the muscles of locomotion—very limited space is allotted to these necessary organs of digestion; hence we find the salivary glands of various shapes and dimensions so disposed that they fit in with, without obtruding on, the other thoracic contents; indeed, their intermingling offers one of the greatest obstructions to a clean and perfect dissection of them. The salivary glands of the insecta may be divided into three groups, each possessing distinctive characteristics: first, those which are tubular—these may be subdivided into the long and convoluted tubes of flies and lepidoptera, the branching tubes having blind extremities, as found in *Blaps mortisapa*—the churchyard beetle, and the tubes surrounded at intervals by whorls of cæcal bags, as in *Cicada*; the second group comprises that variety of form which is represented by the gland of the cockroach, viz. the racemose gland, which finds its simplest form in *Gryllus domesticus*; the third division may be called the cystic, consisting of mere globular distensions of a secreting tube, and finding its representatives in *Pulex irritans* and *Cimex*. By referring to the rough diagrams exhibited, the principal types will be made more evident. As the salivary glands of the mammalia open by ducts into the mouth, it might be reasonably inferred that they do so in other animals, seeing that one of the offices of the saliva is the moistening and softening of the food previous to deglutition; but while they do in insects, as a rule, open on the floor of the mouth, a large number of instances occur where they occupy positions much lower in the alimentary canal. Again, they differ in number in many insects, the majority having only a pair, while others have two or even three pairs uniting their tubes to form a common duct. In *Nepa cinerea*, or water scorpion, which has three pairs of glands, two unite on each side to form one duct, while the

third pair remain distinct till it reaches the mouth, and is considered by some insect anatomists to be a poison-secreting gland, which may be the case, as *Nepa* is well known as one of the most predaceous inhabitants of our freshwater ponds. Again, they may vary in length in different insects, being in some cases, particularly in larval forms, and especially in caterpillars, as much as two or three times the length of the intestine, and as the progressive development and growth of these larval forms presupposes the need for an increased proportion of nutrition, we may explain the necessity for such extensive salivary glands on the ground of an increased demand for ptyaline to promote the assimilation of the enormous quantity of vegetable food they consume; in perfect insects, with perhaps the exception of the fly, they do not extend beyond the thorax. Burmeister, to whom I am indebted for some of my information, divides the salivary glands of insects into those opening into the mouth, and those situated in close proximity to the stomach, and opening more or less directly into it; the large aquatic beetle, *Dyticus marginalis*, offers a very good example of this latter division, the whole of the external surface of the stomach being clothed with cæcal tubes, which open on its interior and help to make up its lining surface, and are said to secrete saliva. The same peculiarity may be met with in many of the carnivorous beetles, and grave doubt is thrown by many observers on their salivary function, being considered more properly glands for the secretion of gastric juice; but whatever their true office, the histological student will find them most interesting objects when stained with carmine, which will bring out the large nucleated secreting cells which line their interior. As I wish to confine my remarks to those insects whose salivary glands open into the oral cavity, I shall leave these doubtful glands out of consideration, and pass on to examine the anatomical character of the three groups which stand most prominently before us. I have said that the salivary glands of insects may be divided into three groups—the tubular, the racemose, and the cystic, and if I give you an illustration out of each of these, it will enable you to examine the rather imperfect

specimens I have placed under the microscopes on the table with a better chance of understanding them.

The first to which I shall call your attention is that simple form of tube which, although found in many insects modified in arrangement, such as the branched tube with blind extremities in *Blaps* or the distended tube of *Tabanus*, finds its simplest example in *Musca vomitoria*. In the blowfly the salivary glands are found lying as convoluted tubes, one on either side of the chyle stomach in the thorax, but are attached so intricately by the tracheæ to adjacent organs that it is a work of much difficulty to isolate them in dissection without tearing and damaging them; near the anterior portion of the thorax the glandular tube opens out into a sacculus, which, becoming gradually contracted to form the duct, passes onwards to join its fellow of the opposite side, when the duct becomes common, and opens by a narrow slit on the upper surface of the labium which forms the floor of the mouth. Mr. B. T. Lowne, who has made some most delicate and careful dissections of the blowfly, so accurately describes the anatomy of this part that I am sure you will forgive my introducing his clear and lucid description of it; he says: "The salivary ducts and common salivary duct are kept open by a spiral fibre developed in their internal coat. The external coat is yellowish, thick, and thrown into rugæ except when the ducts are stretched. The ducts are exceedingly elastic and extensile; just above the labium the common duct changes its character, losing its spiral fibre and extensibility. It becomes perfectly transparent, and dilates into a cavity somewhat resembling the human glottis. This is a most perfect valve, for its superior wall is elastic, and pressed down at its anterior portion against the inferior wall, so entirely closing the duct at this point. A pair of long slender muscles arising at the posterior extremity of the pharynx, run beneath that organ, and are inserted into the anterior part of this valve, opening by their contraction. It will be easily understood that the sucker-like action of the lobes of the proboscis, as well as the opening of the pharyngeal cavity, would tend to exhaust the mouth of air, and so to cause a flow of salivary fluid into its cavity, which would

continue as long as the proboscis remained in action, were it not for this valvular arrangement in the salivary duct. The opening and shutting of the valve is controlled by a ganglion placed in front of and beneath it; nerves from this ganglion are distributed to the mouth as well as to the long muscles which act upon the valve. Any dryness of the epithelial lining of the mouth in which these nerves ramify would undoubtedly communicate an impression, and cause a reflex act by which the valve muscles would contract and so cause a flow of saliva by opening the valve." I have thus quoted at some length from Mr. Lownes' 'Monograph on the Anatomy of the Blowfly,' because its description is so clear, and the explanation so ingenious; I have the less hesitation in doing so because I can, from my own dissections, verify all that he has stated. A specimen placed under the microscope on the table and the photograph I hand round showing the valve and the two muscles attached to it.

Very different in their characters are the salivary glands of the flea, which may be also examined under the microscope after the close of this meeting.

These glands commence as two bladders lined by very minute secreting cells; these, with two similar bladders, are attached on either side of the proventriculus, or crop; from these two bladders, situate in the anterior part of the thorax, two short tubes, continuous with the interior of the glands, and distended by a spiral fibre, pass off and become united, passing thence as a single tube to join the corresponding tube of the other side, where they form the common duct which enters the oral region. As the oral cavity of *Pulex irritans* is so small, it strikes one as being somewhat difficult, if not impossible, that blood-corpuscles should find their way through it, and as they are never found in their entirety in the red food contained in the crop, it is just possible that the salivary secretions may act upon the corpuscles as powerful solvents, thus enabling them to pass in a fluid form; probably these secretions may be of an acid character, but of whatever nature they may be, they evidently possess a constituent of some corrosive power, for we have experience of the irritability remaining after the puncture of either

Pulex irritans or *Acanthia lectularia*. The saliva of a serpent, it is stated, has a powerfully solvent action, and if such is the fact, we may find an analogous instance in this case of the purely carnivorous flea possessing salivary glands fitted to supply a solvent for their food.

These glands appear, in form, to occupy an intermediate position between the tubular glands, as, for instance, those of the fly, and that which I shall next bring under your notice is the salivary glands of the *Blatta orientalis*.

Secreting glands are sometimes provided with reservoirs, in which the secretion is stored till it is required to be used or got rid of: thus the kidneys store their secretion in the bladder, the gall-bladder receives the bile, the vesiculæ seminales may also be quoted as receivers of glandular secretion; but in no case do we find storage provided for the saliva amongst the higher animals, if we except the snakes and the so-called storage of poison, but the saliva is being swallowed as fast as secreted; but in the cockroach sacs are attached to the salivary glands, and are found very frequently distended to their utmost extent by a clear, colourless fluid of a slightly acid reaction when tested with blue litmus paper.

It is this peculiarity of storage which adds an interest to the salivary glands of this member of the *Blattidae*. I may perhaps make my description more lucid if I describe the appearances of them presented on dissection. In dissecting a cockroach, the easiest plan of proceeding, after chloroforming it to death, is to remove the legs and wings, close up to the thorax, by a fine pair of scissors; then pin it down to a cake of wax under water, to which a little spirits of wine has been added; then with the scissors cut an incision up each side of the thorax, without greatly disturbing the thoracic contents, carrying the incision up to and partly into the occipital foramen; raise the whole of this flap, taking care to clear it of the tracheal attachments as you proceed; when you have reached the foramen cut off this chitinous flap; the thoracic contents then presented to your notice will probably be, first, the proventriculus slightly distended with fluid: examining this with a hand lens you will observe, on either side of it, a racemose body, looking very silvery

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from the presence of an extensive ramification of tracheæ, which not only permeate the glandular structure dipping down between the secreting cells, but bind the entire organs to the sides of the crop—these glandular lobules, looking like a flattened bunch of grapes, bear a striking resemblance to the similar racemes of the parotid in the higher animals: the lobules are more or less three-sided, and made up of a multitude of saccules, united by a connective tissue, and emptying their contents into tubes which, uniting with each other, become an excretory duct of some considerable size, which passing upwards joins with the corresponding duct of the other side, becoming a common duct, opening in the floor of the mouth; further examination will show that, after these tubes have united, two other tubes join the common duct, and on tracing these back we find each tube ending in a long sac of very extensile tissue, lined with pavement epithelium, having large and well-marked nuclei; and if the insect has been recently caught, these sacs will be found flaccid and empty, but if it is kept without food for some time, and there has been no demand for saliva, these sacs may be seen as clear distended bladders, unless, as often happens, they get accidentally ruptured in dissection. The cricket has a somewhat similar arrangement of its salivary glands, but of a much more simple character. I have not been able to make out the existence of these sacs in this insect, but, judging from the starchy nature of the food taken by these denizens of our metropolitan bakeries and kitchens, I should surmise that the cricket possessed them equally with the cockroach, and that careful dissection would find these necessary addenda to the salivary glands.

In the higher animals the salivary glands are thoroughly permeated by the capillaries, but in the insecta the blood circulates through *sinuses* whose walls are made up by the various viscera, and which are thus constantly being bathed by it, and in this manner the salivary glands of insects are enabled to select from it, and to appropriate those constituents necessary to the production of saliva; no more suitable form to furnish such an extended surface to this circulatory fluid could be conceived than the flattened racemose condition of

these glands in the cockroach. Having selected their salivary nutrition for the blood, it undergoes its modification in the secreting cells, and the product is then collected in a simple ramification of the duct which, by careful observation, may be traced into each lobule. The secretion then accumulates as the contents of each lobule is poured into the main duct, and at last it reaches the common duct, where, if no necessity for its expenditure exists, it is stored in the salivary sacs.

In taking a general view of the salivary glands of insects, we find that while they exist in their simplest forms in the carnivorous class, such as the flea, the gadfly, and the predaceous water-beetles, and passing through that class which contains the omnivorous fly, with its simple, if extended, tube, we touch upon the elaborate gland when we come to those insects whose food, being the farthest removed from the purely animal, and therefore more difficult to assimilate, necessitates the provision of an abundant supply of ptyaline to convert, by its catalytic action, the starchy elements into the sugar of nutrition; that this salivary secretion has a most powerful effect upon the food of insects may be proved by observing the change in character which occurs in a mulberry-leaf during the process of its mastication by a silkworm: It is roughly cut off and quickly chewed, at the same time mixed with the saliva, which produces an appearance in it as if the leaf had been boiled, and thus the green pap is conveyed to the stomach in a fitter condition to undergo its conversion into chyme. It would be an exceedingly interesting study, if one had the time, the hand, and the eyesight, and would at the same time supply a hiatus in insect anatomy, if the salivary glands of insects and their larvæ could be worked out fully; in this small contribution to the subject which I have been enabled to offer I have derived much interest, and a clearer insight into the beauty of insect organisation than would be generally imagined, and, at the same time, the training of the hand for gently and steadily touching delicate mouths is not the least of the advantages to be derived from a prosecution of these researches. I fear I have dealt rather

too concisely with my subject, but it will allow more time to be devoted to the very instructive examples of these three types which I am enabled to show you under the microscopes.

THE LIMITATIONS OF DENTAL SURGERY.

By THOMAS GADDES, L.D.S. Eng. and Edin.

(Concluded from page 18.)

The removal of fractured and necrosed spiculæ of bone, or the excision of very pronounced and painful septæ from the alveolar region of the jaws, and paring the bony alveolar margins, are recognised actions in Dental Surgery.* Mr. Chas. Tomes writes,† “hypertrophy of gum and alveolar-border may be removed by operation, the masses being pared away with a scalpel, or, if necessary, with bone forceps.”

The treatment of chronic alveolar abscess is exceedingly common, and this, too, where there exists an external sinus, or even a fistulous communication with the cavity of the mouth. The treatment in some of these cases, occasionally including the conservation of the tooth, the disease of which was the prime cause of trouble, extends over a period of many weeks or even months. This, of course, embraces the use of such remedial agents as the case requires, which may necessitate the administration of an aperient, a tonic, or alterative. Mr. Thomas Arnold Rogers, in his Presidential Address before the Odontological Society said‡ “These troublesome cases of suppuration having a dental origin . . . we used generally to relegate to the surgeon. But more properly they are Dental cases.” The operation known as the amputation of the apices of the roots of teeth by cutting through, therefore removing, portions of

* C. J. Fox, in ‘Transactions of Odontological Society,’ 1864, p. 188.

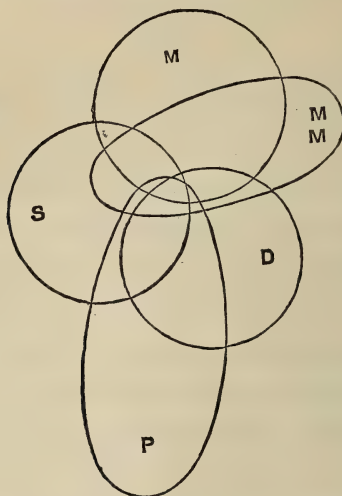
† Gant’s ‘Surgery.’

‡ ‘Transactions of the Odontological Society,’ vol. xiv, p. 83.

the jaw, is a principle of treating abscess that has several advocates.

Also the treatment of diseases of the antrum, where arising from the teeth, is ordinarily undertaken by the Dental Surgeon, and many cases, both in hospital and private practice, could be cited.

Cases of necrosis of portions of the alveolar processes of the jaws, whether arising from alveolar abscess or other causes, not infrequently come under the care of the Dental



The above Woodcut has been prepared to diagrammatically represent the relations of the sub-sciences collateral with and including Dentistry. M, the practice of Medicine; S, Surgery; MM, Materia Medica; P, Physic; D, Dental Surgery. To illustrate the connections with Morphology, Physiology, Pathology, &c., would require several planes, and it is thought the above is sufficient for the present purpose.

Surgeon. These diseases, generally of a chronic nature, usually require a somewhat long period of local and constitutional treatment, pending exfoliation and healing. And the removal of the sequestrum also requires at times some little surgical dexterity. The text-books on Dental Surgery set forth these lines of treatment: and the literature of the speciality contains the records of many instances in which they have been adopted. In the Dental department of St.

George's Hospital in 1878 the Dental Surgeon removed* the whole of the necrosed intermaxillary bone; also a tooth and sequestrum three-quarters of an inch long. The late Mr. Sercombe, Dental Surgeon to St. Mary's Hospital, records† two cases which occurred in his practice at that institution, one of which was the sequel of typhus and ulcerative stomatitis. Similar cases have also fallen within the practice of, I may say, nearly every Dental Surgeon to a general as well as to a special hospital, whose experience thereat has been at all extensive. The 'Transactions of the Odontological Society' and the Dental periodicals, not mentioning the numerous unrecorded cases, bear ample testimony to the fact that the treatment of necrosis of the alveolar portions of the jaws is frequently undertaken by Dental Surgeons.

The division and also the excision of a portion of the normal gum tissue are legitimate actions in preparing certain cavities for filling. The removal of an abnormal growth of gum-like tissue, or tumour, which usually occupies a carious cavity, and is ordinarily denominated polypus, is also an unquestionable Dental operation; so also is the removal of a similar tongue-like mass of gum growing from between two teeth, and, it may be, overlapping one tooth, or even two or three teeth. Sometimes these small gum tumours, which it is the common practice of the Dentist to remove, assume larger dimensions, it may be the result of merely a longer period of growth, when they are regarded as forms of epulis—a term having no histological significance. Somewhere in the history of this early so-called polypoid and later so-called epuloid growth, there would appear to exist in the estimation of some persons, a kind of imaginary line of demarcation. The case, when regarded as being on the one side of this ideal and variable point, is considered as coming within the scope of the Dentist, while if on the other side it is thought beyond his sphere. But I freely admit that I am not acquainted with any difference either in the cause or the clinical history of such a simple

* 'St. George's Hospital Reports,' 1878.

† 'Transactions of Odontological Society,' vol. ii

tumour of the gum, and I desire to be informed at what period it ceases to be special and becomes general. Of course there are some forms of tumour of the gum, the malignancy of which is recognised and undoubted, but the form instanced is not of that nature. Tumours of the gum and periosteum of the alveolar process, having their cause unquestionably in and associated with the teeth, and in which there was no indication of malignancy, have been removed by Dental Surgeons.

Mr. Coleman removed a tumour from the mouth at the Dental Hospital of London, and in connection with this case said* "he would offer some observations upon a few of the most common forms of tumour met with in the region of the mouth, which came under the care of the Dental Surgeon." Numerous other cases which have been treated under similar circumstances might also be mentioned. The several text-books on Dental Surgery not only describe these growths, their nature and causes, but also enter into details regarding their treatment. Each of the several authors records cases of his own experience as a practitioner of Dental Surgery. Questions upon those growths are given by the Dental section at nearly every examination for the Dental degree of the several licensing bodies.

The use of therapeutic agents, both locally and internally, would appear to be recognised as included in Dental Surgery by those whose recommendations and opinions command respect and carry weight. In his lectures† delivered before the College of Dentists, in 1859, Dr. Richardson advocates the internal use of remedies in hæmorrhage after tooth extraction, neuralgia, &c. So do Mr. Salter,‡ Mr. Moon,§ Messrs. Tomes,|| Mr. Coleman,¶ Mr. T. A. Roger,** and many other distinguished specialists. The effects of the administration of remedies, whether they be applied cuta-

* 'Transactions of Odontological Society,' vol. iii.

† 'Lectures on Diseases of the Teeth.' By B. W. Richardson, M.D., &c.

‡ Holmes' 'System of Surgery.'

§ Bryant's 'Surgery.'

|| 'Dental Surgery,' 2nd edition, and 'Lectures on Dental Surgery.'

¶ 'Dental Surgery and Pathology.'

** 'Transactions of Odontological Society,' p. 80.

neously—to the skin or mucous membrane—subcutaneously, as by the hypodermic syringe, or injecting an abscess sac or a granulating sinus, or to the mucous membrane of the stomach—internally—are in very many instances similar, however the medicine may be used. In each of such cases the medicine is absorbed by the surface to which it is applied, and the difference is one rather of absorption than of the mode of administration. Therefore the several modes of administering medicinal agents differ from one another in degree or quantity, rather than does the quality or nature of the responsibility of the administration. If this induction is correct, there can be cause, no valid reason to question the practice of the Dental Surgeon using internal remedies as advocated by the few high authorities whom I have quoted. Yet, notwithstanding, there are some who would have us accept their views that the internal use of remedies is beyond the limits of Dental Surgery. In the face of such difference of opinion as to what is proper Dental practice, it has been stated* that there are “very few practitioners who are in any way at a loss to recognise the well-marked boundaries of Dental Surgery,” or “the well-known limits of their speciality!”

4. Are the subjects enumerated as being on the borderland of general and special practice to be regarded by the profession as within the limits of Dental Surgery?

Having reviewed some of the actions, writings, and opinions of practitioners of Dental Surgery that have reference to that borderland between general and special practice spoken of by Coleman,† Salter,‡ Charles Tomes,§ and others, I shall now submit the following questions:

Are the actions which are set forth as of frequent or common practice among Dentists?

Are the subjects written upon by Dentists, and contained in the special Dental sections of works on general surgery?

* ‘Journal of British Dental Association,’ vol. iii, p. 195.

† ‘Dental Surgery and Pathology,’ p. 274.

‡ Ibid., p. vi, (preface).

§ ‘Science and Practice of Surgery.’ By J. F. Gant, F.R.C.S., vol. ii.

Are the operations performed by Dentists in the Dental departments of general hospitals, and also in Dental hospitals—Are those actions which are so performed and so written upon in the recognised literature of the day, within the limits of Dental Surgery?

With the desire to avoid prejudice or predicting a reply, I may venture to observe that the answer to these questions will be either affirmative, or imply that the operations that have been so performed, and are thus written upon by specialists, are beyond the limits of Dental Surgery. This latter would be an expression of opinion not compatible with the actions of those whom the profession at large look up to as pioneers and guides.

5. Is the education required of the Dental Surgeon sufficient to enable the Licentiate in Dental Surgery to practise this branch of medicine?

Hitherto I have, for the most part, been dealing with the subject of the borderland—the debateable ground—between general and special practice. The question of whether a person with or without this or that qualification should undertake those operations has not entered into the argument. I think that question may justly be considered independently of the theme, What is Dental Surgery? If the answer to the generalised question submitted in section 4 (“Are those actions which are so performed and so written upon in the recognised literature of the day, within the limits of Dental Surgery?”) support and uphold those who would thus raise the status of Dental Surgery, I would inquire, Is the education required for the L.D.S. degree sufficient to enable the Licentiate in Dental Surgery to practise a branch of medicine having such a scope? If it is not, then by all means let the degree be made equal to the requirements.

Directly bearing upon this question we have the opinion and resolution of the Council of the College of Surgeons of England,* “That the Dental license should of itself be

* ‘Calendar of the Royal College of Surgeons of England,’ 1877.

deemed a sufficient qualification to enable the holder to undertake the appointment of lecturer on Dental anatomy, Dental physiology, or Dental Surgery, or of the post of surgeon to a special Dental hospital, or the Dental department of a recognised hospital."

This resolution gives support to the conclusion that the work done in the Dental departments of general hospitals, and also in special Dental hospitals, is Dental Surgery, inasmuch as it may, in the opinion and with the sanction of the Council of the Royal College of Surgeons of England, be performed by the Licentiate in Dental Surgery.

Dental Surgery is a science and an art. The sciences and the principal sub-sciences which Dentistry embraces have been pointed out, and its connections or RELATIONS with several of them have been illustrated.

Regarding the QUANTITIES of the biological sub-sciences, particularly of the general practice of medicine—of surgery and materia medica, I have reverted to some of the opinions, actions, and writings of the most able teachers and leaders in the profession. The conclusion that is forced upon us is that—according to the works of those specialists, Dental Surgery embraces the study and treatment of diseases of the teeth and of their contiguous structures—"contiguous structures" include neuralgia connected with the dental branches of the fifth nerve, impacted teeth, odontomes, dentigerous cysts, diseases of the gum and alveolar process, including simple tumours, chronic abscess, necrosis, and dental diseases of antrum; the use (local and constitutional) of such therapeutic agents as the treatment of those diseases requires, this implying the administration of anæsthetics.

I now ask, does the science and art of Dental Surgery, as we would have it understood, embrace so much, or does it embrace less amounts, of those collateral sub-divisions of medicine that I have just enumerated?

The subject is an important one, and I am fully aware that, from the fact of there being a borderland, the precise limits of Dentistry must, like the practice of medicine and of surgery, be more or less arbitrary. Yet, in these days, when the speciality is taking the position given it by the Legislature

and the great body medical—a standing of recognition which it has been struggling for during the last quarter of a century—the question of the limitations of Dental Surgery was never more pressing than at the present time.

NECROSIS.*

By EDWARD LATCHMORE.

MR. PRESIDENT AND GENTLEMEN,—The subject I have chosen upon which to read a paper, is not a new one and I can hardly hope as a student to add anything original to that which is already known concerning it, if however, I shall have been able to condense that knowledge and place it lucidly before you my object will be attained.

Necrosis is similar to gangrene in the soft parts of the body, and is the complete and permanent arrest of nutrition in a part, occurring for the most part more or less suddenly, which, when dead, retains to a greater or less extent its external form and anatomical structure. The result of this process is the formation of a sequestrum.

The immediate *cause* of necrosis is periostitis, resulting in purulent effusion between the bone and the periosteum; similar results follow inflammation in bone as in other structures, with this difference, that products which cannot in complex organs conform to the nature of those organs, can assume in the present instance the characters of bone. Thus we have the various exudations, with their disposition to form bone, and the other consequences as ulceration and mortification, or caries and necrosis.

In periostitis the membrane becomes highly vascular or hyperæmic, and after a short time an exudation occurs in and beneath it, by which it becomes swollen and soft, and is easily stripped off the bone; at a further stage lymph is effused, and this for the most part beneath the membrane,

* Read before the Students' Society of the Dental Hospital of London, December 11th, 1882.

and if circumscribed forms a node. This exudation may be absorbed, and the part return to its natural condition; or it may undergo further changes, especially if a large part of the surface is affected; thus a diffused layer may become bony, and as this gradually takes place it becomes connected to the body of the bone by its blood-vessels, and thus an additional layer of bone is added to the old, the periosteum itself being somewhat thickened.

Now, if ulceration of the bone takes place, and a considerable portion of the alveolus is destroyed, the vascular supply is cut off and the exposed surface becomes necrosed. To a certain depth only do these changes occur, the deeper seated portions of bone being well supplied by the internal vessels, so that a line of separation may ensue between the part thus nourished and the exterior. Inflammatory exudation takes place in this line, so that in the course of time the necrosed portion becomes detached, coming off in the form of a scale, as not unfrequently occurs after ulcerative stomatitis, also the ulceration due to salivation, to scurvy, or cancrum oris.

Partial necrosis of the jaw is sometimes accompanied by an extensive osteophytic growth, very delicate branching, separate osseous trabeculæ, first of all make their appearance, these increase in size and unite with one another. The lamellæ formed in this way are always perforated with sharp edged foramina, which lead to the vascular canals upon the surface of the jaw. As the layers increase in thickness, they are disposed one over the other like the tiles on a roof, and are marked with manifold tortuous grooves and indentations, which give to the whole the appearance of a remarkably fine filagree work. Extensive, thick osteophytes, developed in association with the symptoms of chronic periostitis, are met with in connection with phosphor-necrosis of the jaws. Primarily, they have a fine spongy texture, and gradually they become compact; finally, a new bony shell is formed, while the original encapsulated bone becomes necrosed.

With exacerbating symptoms, suppuration and sanious ulceration occur upon the surface towards the necrotic bone,

and *cloacæ* are formed in the osteophyte, by which its continuity is interrupted.

Necrosis is common to all bones, its effect upon the teeth and jaws however is of peculiar interest to the Dental Surgeon, its treatment in the former case being almost a daily occurrence, very often extending over a protracted period, and at times proving most obstinate to every form of treatment, this depending, however, greatly upon the condition in which the tooth presents itself at the period of resorting to remedial measures.

First, with regard to necrosis of the *teeth*, it may be produced by various causes, viz.:

1. Protracted fevers.
2. Immoderate exhibition of mercurial medicines.
3. Caries.

4. A very common cause, namely, violence, by which the principal source of vitality of the tooth, that through the apex of the fang is severed, I say principal because there is a certain amount of vitality obtained through the medium of the alveolo-dental periosteum, this in many cases preserving to a certain extent the vitality of the cementum and its consequent adhesion and fixity in the socket of many so-called dead teeth. This supply also furnishes a considerable degree of vitality to the dentine of the fang, and not improbably also to an outer indefinite layer of the dentine of the crown.

5. Necrosis is caused by inflammation and suppuration of the lining membrane induced by periostitis.

And, lastly, by the use of escharotics.

We may get *partial* or *entire* necrosis of the teeth.

The most common case of partial necrosis is that in which the dentinal pulp has become by some means or other destroyed, and through it the greater portion of dentine, the cementum still retaining its vitality, in these cases Mr. Tomes says: "The cementum becomes the seat of an increased if not a morbid action, so soon as the vitality of the dentine is lost. In some cases great additions are made to its surface, and through the new tissue the connection with the periosteum is preserved. In others, again, absorp-

tion is set up, and the root becomes reduced in bulk, is gradually detached from the periosteum, loosens, and falls out. In the former case the living portion of the tooth appears to be very limited in amount, its extent being often confined to the newly added tissue; for the appearance presented by some specimens would justify the conclusion that the cementum which existed at the time the dentine lost its connection with the soft parts, though not deprived of life concurrently with the dentine, yet subsequently lost its vitality, but not, however, before new cementum had been added upon the surface of the older tissue in parts.

“Necrosis may, however, be confined in the first instance to the cementum, the dentine and dentinal pulp retaining their normal relations. In cases which present this character the tooth becomes loose, and the gum usually, although not necessarily, recedes. The surface of the cementum is detached from the periosteum, excepting perhaps at and about the extremity of the root where the nerves and blood-vessels pass into the pulp cavity.

“The patient complains of intermittent pain in the tooth, excitable at any time by the application of hot or cold water; very commonly pus will escape from between the tooth and the gum when the latter is pressed. The crown does not assume the dark slate colour which follows after death of the pulp. In this form of the disease additions are not made to the cementum unless in small or isolated spots.

“Generally the cementum is greatly reduced by absorption, and even the dentine in many cases suffers also.”

Mr. Tomes speaks of a case in which seven front teeth lost their attachment to the socket, excepting where the nerves and blood-vessels entered the root, without the vitality of the pulp having been sacrificed or the gums absorbed.

The remaining form of partial necrosis is that in which one root of a tooth is affected, the remaining root or roots being quite healthy.

“Teeth when in this condition are apt to be at times very troublesome. When they are used in mastication, pain is experienced from the dead root being pressed into the

socket, the lining membrane of which is injured by the rough surface usually presented by the dead root. The continued irritation arising from this cause is productive of thickening of the alveolar covering, accompanied by the development of a high degree of sensitiveness in the hypertrophied parts, the susceptibility to pain in which is consequently increased. Hot or cold fluids taken into the mouth also excite pain in the tooth itself, or in the irritated alveolus. The alveolus and gum of the dead root may or may not become absorbed.

Treatment.—The success of the treatment of partial necrosis of the teeth depends entirely upon the progress the disease has made. When the necrosed condition, or rather the partially necrosed condition, of a tooth has been occasioned by a blow, caries being entirely absent, the pulp cavity should be opened up by drilling through the lingual surface of the tooth, this condition generally occurring in front teeth; the canal should then be thoroughly cleared out, and antiseptic dressings applied until the tooth has been brought into a healthy condition, when the canal may be filled permanently with gold or whatever may be thought best.

If the death of the pulp has been brought about by caries and suppuration has not extended through the apex of the fang, a few antiseptic dressings, the canal having been cleared out, will soon bring the tooth into a healthy condition. On the other hand, if the lesion has advanced to the stage of alveolar abscess, weeks, or even months, of dressing may be necessary to restore the health of the tooth; or it may prove obstinate to all treatment, when extraction will be inevitable.

In the case of entire necrosis of the tooth with suppuration going on round the fang, pus oozing out at the neck of the tooth between it and the alveolus, the only treatment will be extraction.

The most serious form of necrosis which calls for treatment at the hands of the Dental Surgeon is that of the alveolus, and at times of the whole jaw.

(To be continued.)

OCULO-DENTAL DISEASES, OR MALADIES OF THE EYE CAUSED BY DENTAL IRRITATION.

By Dr. GALEZOWSKI, M.D., Oculist, Paris.

(Concluded from Vol. XXV, page 1176.)

Oculo-dental affections consecutive to dental caries.—Let us now examine the second class of ocular affections, especially those which are produced under the influence of dental caries.

There are four varieties of alteration of this kind:—1. Reflex asthenopia; 2. Spasms of the orbicularis and of the external muscles of the eye; 3. Inflammation of the cornea, of the iris, and of the choroid; 4. Affections of the orbit and of the lachrymal ducts.

I. *Reflex asthenopia.*—At first fatigue is felt in the eyes whenever one tries to look more or less closely at an object, when one wishes to read, write, sew, &c. On beginning work these individuals find nothing wrong, their sight is good, but little by little a feeling of lassitude comes on, and the objects become troubled and confused, the letters being doubled and multiplied. This state becomes so fatiguing that the individual makes most painful but fruitless efforts to continue the work at which he is engaged. Sometimes it is the eye itself, which is sensitive, painful, suffused with tears; the lids are constantly blinked, and soon the patient feels in the compass of the orbit, and more particularly in the direction of the supra-orbital nerve, a dull, tense pain, which gets worse with each new effort, and which may be transformed into an intense neuralgia if he does not stop work. But some moments of absolute repose generally suffice to bring the eyes back to their normal state. Ordinarily the patients close their eyes for some instants, often passing their hand over the lids, and the trouble disappears only to reappear on a new effort of work.

II. *Reflex kerato-iritis and irido-choroiditis occasioned by dental caries.*—The irritation of the dental nerves has not

always the same intensity nor the same gravity, and cases are found in which all the dental nerves of the upper jaw are affected by a neuritis for years together, as a consequence of dental caries affecting all the teeth or a great part of them. In these conditions a kind of ascending neuritis is slowly developed, without local suffering; the nervous irritation is then transmitted by reflex action to the ciliary nerves and provokes sometimes in the eye, not now a simple asthenopia, but inflammatory attacks, now of the cornea and iris, and now of the internal membranes of the eye.

a. Abscess of the cornea.—These are relatively very rare and do not differ from abscesses from other causes. They are chronic, and are often complicated with intense peri-orbital neuralgias, as well as with other signs of iritis. The abscess follows a slow course and resists all treatment, which should make one suspect their dental origin. This diagnosis becomes all the more probable if the affections should be complicated by spasms of the seventh pair.

b. Irido-choroiditis.—The irritation of the eye by reflex action proceeding from carious teeth may lead to an irido-choroiditis. The extraction of the carious teeth and the excision of the iris have been able often to arrest the progress of the malady, and to re-establish the nutrition and the density in the globe of the eye sympathetically affected.

III. *Reflex mydriasis.*—Desmarres, senior, was the first to point out the development of spontaneous mydriasis following dental caries, and which rapidly gets well after the removal of the cause of the affection. He says, in his '*Traité des maladies des yeux*:'—"The neuralgias of the superior maxillary and inferior maxillary nerves may produce very intractable mydriasis of long duration, and which only yield, as a rule, after the removal of a decayed tooth." Analogous facts have been reported by Terrlinck, Mackenzie, and Stellwag von Carrion, and cure has been obtained in all cases when the carious teeth were extracted in time. I also have seen indubitable cases of this correlation.

IV. *Spasmodic contractions of the lids and of the oculo-motor muscles.*—Not rarely are observed spasmodic contractions of the orbital muscles of the lids, or of those muscles of

the face which are supplied by the seventh pair, and these contractions are produced under the influence of trifacial neuralgias occasioned by dental caries. Nélaton and De Graefe have demonstrated not only the existence of this reflex relation, but they have also practised with success in these cases section of the supra- and infra-orbital nerves after the extraction of the carious teeth. I have had occasion to observe, for my part, blepharospasms which have resisted neurotomy and which have got well after the extraction of carious teeth.

ANNOTATIONS ON ANÆSTHETICS.*

By SAMUEL OSBORN, F.R.C.S.,
ANÆSTHETIST TO ST. THOMAS'S HOSPITAL.

(Continued from page 28.)

An objection I have heard raised against Clover's apparatus is that there is necessarily a certain amount of carbonic acid poisoning. Such is undoubtedly the case, but the success of his inhalers is quite sufficient to override this objection.

Other instruments for administering ether may be used, amongst the best being the ordinary cone of leather with a sponge inside, or Mr. Ormsby's inhaler, but that form of apparatus is the best which one is in the habit of using most frequently.

Whilst speaking of caution, great objection should be made to the administration of anæsthetics in the wards, as frequently there is more difficulty in bringing the patients round. Whether this is due solely to their being unprepared, or due to imperfect ventilation, I cannot say; it has besides a depressing effect upon the other patients.

Anæsthetists should not administer anæsthetics for too long a time at one sitting, for the administrator after giving anæ-

* Reprinted from pamphlet, with author's notes of experience to present date added.

thetics for two or three hours consecutively, becomes somewhat anæsthetised himself and lacks that amount of vigilance which he had at the commencement, and ought to have throughout the whole of the administration. This is more especially the case when open inhalers are used. There is in addition great mental strain to the administrator from the anxiety and constant watchfulness entailed.

How long does it take to get a patient under the influence of an anæsthetic?

Nitrous oxide gas will produce insensibility in one minute, but the effect being so transitory it can only be given for operations which can be completed in five minutes. Ether given by any open inhaler will not produce insensibility under eight or ten minutes; when given by Clover's portable inhaler, insensibility can be produced in from three to four minutes, and when preceded by a few inhalations of nitrous oxide gas in from two to three minutes. But if nitrous oxide is not used the space of time occupied in producing insensibility is the same in both of Clover's apparatus. The time occupied, however, and by any apparatus, is always shorter in the warm weather, and a longer time is required for persons of strong constitution or accustomed to much alcohol, the amount of the anæsthetic required varying in a corresponding degree to the vital capacity of the patient.

Varieties of ether produce variation in the time of procuring insensibility. It shows, therefore, how necessary it is to have the best.

Also in cold weather any reservoir which is to hold ether should be stood for a short time in warm water. These are two points of great importance and should be borne in mind, as they materially affected the time of getting the patient under the influence of the anæsthetic.

Chloroform, when used in children and old people, produces insensibility in about two minutes or rather less.

How long may a patient be kept continuously under the influence of an anæsthetic?

Nitrous oxide gas, as was previously mentioned, can only be given for a space of one minute, therefore ether or chloroform is used when duration is of consequence, and of the two

I undoubtedly give the preference to ether on account of its being a vascular stimulant, whereas chloroform has a sedative effect upon the heart's action. Three hours and a half is the longest time that I have given ether continuously, the case being one of excision of the pylorus performed by Mr. Sydney Jones, but even then after discontinuing the application of the mouth-piece the patient was, of course, considerably longer in a state of unconsciousness, although not entirely insensible, as shown by touching the conjunctiva. In cases where anæsthesia is kept up for a long period, shock, partially due to the anæsthetic and partially due to the operation, is developed to a greater or less extent, shown by coldness of the surface of the body and extreme prostration. This is best combated by the application of a warm-water bottle to the cardiac region, and subsequently, when the operation is completed, by an egg-and-brandy enema.

(To be continued.)

THE CLEANSING OF INSTRUMENTS.

By JOHN TRUDE FRIPP, L.D.S.I.

SOME time ago a report appeared in the Journal of a case which occurred on the Continent of syphilitic inoculation from the use of uncleansed, or imperfectly cleansed, instruments. I have ever since followed the plan which was then advocated of cleansing instruments in carbolised water, a glass jar of which I always keep on the operating table.

Last week I saw a case which again shows the necessity for the most scrupulous care in this respect, and though the subject has once been mentioned in these pages, I venture to think that it is not out of place to bring it forward again.

"We need to be reminded of these things though we know them."

A servant, about thirty years of age, came to me to have a

lower wisdom stump extracted. She has for many years been living in families with which I am personally acquainted, and I have no reason whatever to doubt either her veracity or perfect respectability.

I found her mouth altogether in a very bad condition. Breath fetid and offensive, gums unhealthy and receding, alveolus absorbed, teeth loose and a good deal furred. In fact, just the appearance which would be looked for in a case of syphilis.

She told me that her mouth was in good condition until eight years ago when she went to a Dentist in a London suburb to have a tooth extracted. The Dentist was fetched in from the public house very drunk! He told her she could not bear to have the tooth extracted, but he would lance the gums as there was an abscess. He did so and the next day her mouth was so swollen and inflamed that she was unable to eat, and in fact for a long time took nothing but fluids. The mouth has never since resumed its former condition, and the impression left upon her own mind and on the mind of her mistress was that the gum was opened with a lancet which had not been cleaned, and so the mouth had been poisoned.

They were probably not far wrong in their conclusion.

Reflections from the Surgery.

NECROSIS.

Case reported by J. LEWIS ROBERTSON, L.D.S. Eng.

THE following notes of a case which came under my notice a few years back, when Dental Surgeon to the General Hospital here, are interesting and peculiar.

—, female, a very pretty child, two and a half years old, was brought by nurse to me “to have a stump extracted,

as it made her breath so bad.” On examining the child’s mouth I found the temporary teeth quite perfect and correct in number, but the four upper incisors loose and the gum rather swollen, breath extremely offensive. On examining the palate a small, black mass was seen lying about a quarter of an inch behind the left central; diagnosis, necrosed bone. On touching with explorer I found it very loose and removed with forceps and found it to be the cusp of a permanent incisor about two thirds formed, the concave portion full of horribly offensive matter. Cooling medicine was ordered and nurse told to bring the child again shortly. A week afterwards the mouth was healed, breath sweet, and the teeth nearly as firm as they ought to be, a fortnight after they were quite firm.

History of the case.—Child standing at its mother’s knee, swung round, and knocked its mouth violently against the chair (some months previously to my seeing it) the cusp must have become detached from pulp by shock or inflammation set up, acted as a foreign body, and worked its way out through palate. What is likely to be the result? An odontome? and may not odontomes be more frequently caused by injuries to the mouth in early life than they are supposed to be?

ULCERATIVE STOMATITIS.

Case reported by THOMAS HENRY COLEMAN,
DENTAL SURGEON TO THE GRESHAM INFIRMARY.

IN July of last year, I was called in to see Mrs. A—, a patient in the C— Lunatic Asylum, recently admitted, but not under strict restraint. She wished me to repair an upper set of artificial teeth which were held in position by clasps embracing the canines and the left central tooth.

I made an appointment to see her in a fortnight, in the

meantime she was attacked with acute mania, and had to be confined in a padded room.

I saw her again in July, her mental condition was much improved. On examining her mouth I found the natural teeth had been either knocked or pulled out, and gums presenting the appearance of a severe case of "ulcerative stomatitis." Along the line of the alveolar border there was a mass of thickened and congested gum presenting a dirty white appearance, it did not extend far into the mouth; running its whole length, there was an irregular furrow, in some places a quarter of an inch deep.

I at once adopted the treatment laid down in 'Tomes' Dental Surgery.' After removing the thickened layer of epithelium, I found the gums of a deep florid colour and dotted with minute scarlet points, and the alveolus in some spots denuded of periosteum and necrosis commencing.

I cauterised with argent. nitr. and prescribed internal doses of ten grains of potass. chlor. three times a day, gradually increased to twenty grains. The gums were dressed alternately with argent. nit. and strong iodine tinct. every morning for a week, subsequently the iodine tinct. was only used. Marked improvement was observed in a fortnight; some considerable difficulty was experienced in preventing adhesion of the outer edges of the furrow and the formation of a sinus, but it was overcome by the insertion of a strip of lint soaked in the iodine tinct. The treatment extended over six weeks, and the gums gradually assuming a healthy state. The general health of the patient was good, and I could trace no hereditary or contracted syphilis. How far the violence she used in pulling or knocking out the natural teeth and the psychological state of the patient may have induced the disease in an interesting question.

British Journal of Dental Science.

LONDON, JANUARY 15, 1883.

THE deputation, composed of influential members of the British Medical Association, which, being introduced by the Duke of Westminster, had an interview with the Vice-President of the Privy Council upon the prospect of the new medical bill being brought into Parliament, cannot but at the same time have forwarded a scheme by which the position of the Dental profession will be in some way affected. Anything dealing with the examining bodies in medicine will have a similar influence upon the same boards which grant the Dental licence, for good or for evil a change will be made.

The new bill, to put it briefly, will make the examinations in medicine one in standard, it being a State examination, the board for which being composed of representatives from the different existing colleges. A great deal which will form the Dental clauses of the new medical act will be based upon the Dentists Act of 1878, so that so far as the general terms are concerned nothing very serious need be feared. What excites a certain sense of uneasiness is, whether the Dental licence will cover the responsibility for administering anæsthetics and drugs. If we are limited to Dr. Quain's definition our position as a profession will fast disappear, and our social status will depend upon a university degree, or one belonging to another body. We cannot see, if Mr. Tomes is spared to us to champion our cause, that such an eventuality will take place. Our observations tend to show that our younger men embrace all subjects which throw light upon the causes of Dental disease and those influences which indirectly lead to Dental disturbance. It is the day for advancement, not restriction.

Speaking generally for the new bill, our sympathies are inclined to go with it; for what is more pernicious than for a

body to hold out inducements to young men to graduate upon easier terms? We do not mean in a pecuniary sense, but by the course of study laid down. If, by the recent report of the Commissioners, we take it that there is a different standard of examination, what percentage of young men will be found ready to undergo the higher examination? The answer is apparent. No blame can be attached to them, for they are acting under the dictates of human nature. When the period arrives for examination a feeling exists with many that the preparation made is quite sufficient and hope is held out that the examiners will be lenient with their questions. How the reverse is felt when, in combating with the world, we find ourselves wanting in that thoroughness of education which fits us for the legitimate performance of our art. In that case a universal degree will cast aside for ever the reproaches that may otherwise arise when in pondering over the experience we have gained in joining this college or that. We watch with interest this new move in legislation.

Manipulative Miscellany.

All instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month, they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits, and without any intention or wish to pit one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

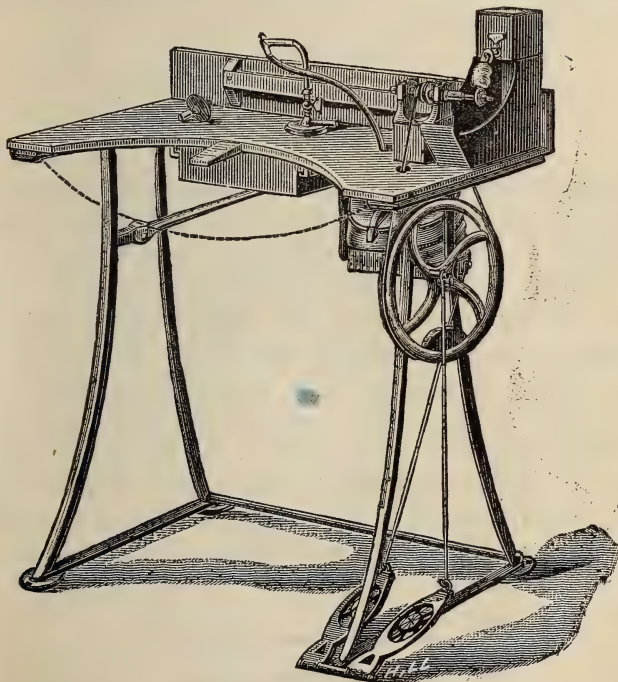
NEW MOUTH-GAG.

A VERY strong mouth-gag has been sent to us for inspection from Messrs. Ash and Sons which has a decided advantage over many which are in use. Its apparent strength and extension movement are its chief features: Our description may be taken as follows:—From the centre of a convex plate a strong metal rod rises one sixth of an inch thick, and upon

this a metal case works with a screw movement, the result being that another plate approaches or retires at will. There is an additional antero-posterior movement which allows the gag to be placed evenly on the teeth at the back of the mouth. India-rubber covers to the plates are also supplied to prevent the teeth being injured under pressure and to ensure cleanliness.

BROMLEY'S COMBINATION DENTAL BENCH.

To those who find space limited, the combination bench will recommend itself. A glance at the accompanying illustration will show that there is a lathe supplied with



water apparatus, bellows worked by the foot for soldering lamp, drawer, tool rack, and several other accessories, all supported on a cast-iron frame, and sufficiently portable to be moved from one part of the workroom to another where light or convenience suit it best.

A NEW REFLECTOR.

Mr. ALFRED GEAR has invented a new reflector which may be adjusted to any ordinary gas arm. It consists of two parts, the reflector, which is circular and concave, made of glass with a slide at the back to enable it to be placed on the second part—the holder. Its mode of attachment to the gas arm is by means of a stout wire clamp with a binding screw. A more simple and effective piece of apparatus cannot be conceived. The clamp and binding screw afford such movement that the mirror may be placed at almost any angle. As all may be packed in a box six inches by one inch, this reflector will be found most useful to those who travel, in addition to its place at home.

ASH'S TIN CYLINDERS.

A SHORT time ago we received a sample of tin cylinders manufactured by Messrs. Ash & Sons, and notice of which was given in our last issue. We have now an opportunity of speaking of their value, having used them in several cases. Being prepared in four different sizes every convenience is made for packing, and the tin, which is of very fine quality, allows a perfectly hard plug to be made, its malleability being exceptionally good. The adept in foil working always has a good word to say for tin and well he may, for properly put in, few plugs excel the white foil. This new production, from a firm whose name is a guarantee for excellence, should readily find its way into the hands of the profession.

ASHENHURST FUND.

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Further subscriptions will be received by Messrs. C. Ash and Sons, the Dental Manufacturing Company, Mr. Rutterford, Messrs. W. and J. Jamieson, and the Editor of this Journal.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

ANNIVERSARY MEETING, HELD DECEMBER 8TH, 1882.

S. LEE RYMER, Esq., L.D.S., President, in the Chair.

AFTER the minutes of the previous meeting had been read and confirmed, the members proceeded to elect the scrutators for the ballot in the usual way, Messrs. R. H. Woodhouse and Swanson being selected.

Mr. J. S. HUTCHINSON handed round and presented to the Society the models of the mouth of the subject now being exhibited at the Royal Aquarium, London, known as the "Missing Link." In every particular the teeth resembled the temporary set of the human being. The four superior incisors were carious and broken to the edge of the gum, and by two elevations on the mucous membrane the permanent central incisors were approaching eruption. Mr. Hutchinson carefully described several details in the physiognomy of this creature which we shall reproduce from the Society's 'Transactions' when published.

Mr. COLEMAN proposed, and Mr. PARKINSON seconded, the new law which created the office of Editor of the 'Transactions,' with privilege of a seat on the Council.

Mr. COLEMAN showed the models of a child's mouth where the first permanent molar was being erupted at the age of ten years. As the temporary lateral incisors were absent, and the permanent laterals had not been erupted in several members of the same family, he considered it highly probable that the first permanent molars were not developed, and the tooth which was being erupted was therefore a second molar.

Mr. J. S. TURNER showed a wire frame which held the coffer dam away from the face, and therefore did away with the weights usually employed.

Mr. STOCKEN said he had that day extirpated a dental pulp, and had found it completely disorganised although there had been but superficial caries. The patient had suffered with severe neuralgia for some time.

Mr. VANDERPANT handed round a number of teeth which had been removed from a patient aged thirty where the articulation had been most imperfect, and as a consequence

great inflammation existed in those teeth which were used for mastication. His opinion was that the four superior incisors belonged to the temporary set, which was not shared by all the members present.

Mr. C. S. TOMES related a case of replantation which he had performed on a boy who had a superior central incisor knocked out; having carried it in his pocket all day, little hope was entertained of success. Mr. Tomes, however, washed the tooth in dilute carbolic acid, extirpated the pulp, and filled the cavity with gold, and replaced it into the mouth. A most perfect union took place, the only disfigurement being its dark colour, which Mr. Tomes could not account for as the pulp was removed and the canal filled with gold.

The PRESIDENT then called for the reports of the Treasurer, Librarian, and Curator, which were read respectively, and showed a healthy state of affairs in all departments.

The PRESIDENT next read his valedictory address, which was followed by a vote of thanks, proposed by Mr. WEST and seconded by Mr. W. R. WOOD, senior, of Brighton, for the able and courteous way he had filled the office during the past year.

Mr. WEST called attention to there being only one new member on the Council, which was pointed out by Mr. CANTON, Secretary, and Mr. TURNER to be an error, as there were two, Mr. West not having recognised the name of Mr. Claude Rogers as a new member of Council.

A vote of thanks was passed to the officers of the past year, and the meeting stood adjourned until Monday, February 5th, when Dr. Joseph Walker, the newly-elected President, will take the chair.

ODONTO-CHIRURGICAL SOCIETY.

ORDINARY MEETING, DECEMBER 14TH, 1882.

ANDREW WILSON, L.D.S. Edin., Vice-President, in the Chair.

THE minutes of previous meeting having been read and confirmed, the following gentlemen were balloted for, and unanimously elected members of the Society:—Peter Crombie, 8, Union Terrace, Aberdeen, L.D.S., Edin.; Warwick Hele, 61, Portland Square, Carlisle, L.D.S., Eng.; David Amos Wormald, 8, Bank Street, Bury, L.D.S.I.,

D.D.S.; after which Rees Price, 1, Montague Place, Glasgow, L.D.S., Eng., was duly nominated for membership.

The Vice-President having vacated the chair for the purpose of reading his paper, the duties of chairman were discharged by Mr. Finlayson.

Mr. ANDREW WILSON L.D.S., Edin., then read a paper on the "Classification of the Teeth in the Mammalia."

Putting aside those species, few in number, which are edentulous, we may separate the mammalia into two divisions; 1st, Homodonts, in which the teeth in the same mouth are so nearly alike in form and size, as scarcely to admit of classification, more especially as almost all homodonts being also Monophyodonts, *i.e.* having only one set of teeth, we lose succession as a factor in classification. As exceptions in this division, we have the long unicorn-horn-like incisor in the narwhal among the Cetacea, and the strongly marked caniniform teeth in the genus *Cholædus* (two-toed sloths) among the Edentata.

2nd, Heterodonts, in which the teeth differ so very considerably in both form and size, as readily to admit of their being arranged in groups. The great majority of heterodont mammalia are also Diphyodont, *i.e.* have two sets of teeth—the first, deciduous or temporary, which falls out, and is replaced by the second, the permanent, adult or successional set.

In the temporary set we have never more than three groups present, and frequently less. These are, beginning at the mesial line, incisors, canines, and molars.

The two first are succeeded vertically by other incisors and canines, while the molars are succeeded by a new group, the pre-molars, and behind the position occupied by the temporary molars we have the permanent molars. Now, as these groups are not all always present in the several species of heterodonts, and even when all present are represented by varying numbers of teeth, their tabulation, constituting what is called their "Dental formula," is of very great, if not primary, importance in the classification of the mammalian species into genera, families and orders.

So much value being attached to these formulæ, makes it of correspondingly great importance that the definition of the several groups of teeth should be as scientifically accurate as possible, otherwise we can only have confusion.

Taking first the mesial group, namely, the incisors, we find a general agreement to define them to be, in the upper jaw, those teeth inserted in the inter-maxillary bones, and in the lower the corresponding teeth usually articulating within them, the question of form or function being entirely

ignored, however widely it may differ from what we would call a cutting tooth, such as seen in man.

Thus in the Rodentia, Hyracoidea, &c., we have incisors, relatively powerful teeth, adapted for gnawing; in the Proboscidea as formidable weapons, offensive and defensive; in the typical Ruminantia (only present in the lower jaw), for tearing, and as comparatively feeble teeth in the Carnivora for nibbling or bone-picking.

Coming to the canine, we find the most concise definition of this group (restricted to a single tooth on each side in each jaw) to be that the upper is that tooth inserted in the maxillary bone, at or immediately behind the intermaxillary suture, and that in the lower jaw to be the tooth which, when the jaws are closed, passes more or less in front of the upper canine.

This definition seems simple enough, but, because certain ideas have been associated with the term canine, it is regarded by some of our ablest odontologists as unsatisfactory.

Now, why need we import the question of form and function into this group, when we exclude it in the incisors? If there is nothing objectionable in speaking of the front teeth of a shrew or a galeopethique, and the tusks of an elephant as all equally incisors, why should we insist on limiting the term canine to those teeth only which fulfil certain functions, and are more or less of a certain form?

Undoubtedly the term caniniform is useful, in so far as it is understood to mean that form seen in the typical carnivora, and when prefixed to a tooth of another group as a caniniform incisor, seen in the outer incisor in many of the carnivora, or caniniform premolar, as in those of some species of seals, and in several genera of insectivora, conveys a definite meaning. But to say that "when we use the term canine we should generally" (query, always) "mean a tooth so modified, and generally, but not always, should be alluding to the same tooth, *i.e.* to the tooth which, in the typical mammalian dentition, comes next behind the outermost incisor," seems to me to be anything but scientific. Should we not rather always mean that tooth, whether so modified or not?

Undoubtedly the lower canine in many genera differs but little from the incisor next to it, but we will most probably find that in some closely allied genus it is much more strongly differentiated. Thus in most of the typical ruminants the difference is comparatively slight, but look at the genus *Cameleopardus*, and see how strongly it is marked there.

According to Mr. Charles Tomes, the reasons assigned for calling these teeth canines,—*i.e.* 1st, Because in some allied

species the tooth in this situation is more pointed; 2nd, because this tooth in those allied genera, which have an undoubted canine in the upper jaw, shuts in advance of the upper canine when the mouth is closed; 3rd, because it is cut later than the others,—are said to be weak, because, as one reason, “form is a very unsafe guide to homology.” No doubt it is, but does that reason not rather cut the ground from under his own position, when, as we have just seen, he says form is the most essential? The same writer, referring to the extinct *Oreodon*, says “it has the eight (?) incisors in the lower jaw, *in addition to a caniniform tooth, which is the fifth, counting from the front.*” Would it not have been much more scientifically accurate to have said, in the lower jaw it has six incisors, small canines, and the first premolars are large and caniniform; its Dental formula being $I_{\frac{3}{3}}, C_{\frac{1}{1}}, PM_{\frac{4}{4}}, M_{\frac{3}{3}}$ (the typical dentition in the placental Mammalia), just as he figures it on the same page?

The same thing occurs in the common mole (which has a similar Dental formula), aggravated by the upper canine? having two roots, and, according to M. de Blainville, being developed in the premaxillary bone, a view also advanced by Mr. Spence Bate in our own day. This latter point would if established, say it ought to be regarded as an incisor, certainly not as a caniniform premolar.

The following formulæ will best show the various views held as to the dentition of the mole:—

M. F. Cuvier	. . .	$I_{\frac{3}{4}}$	$C_{\frac{0}{0}}$	$PM_{\frac{4}{4}}$	$M_{\frac{3}{3}}$
Prof. Bell	. . .	$I_{\frac{3}{4}}$	$C_{\frac{1}{1}}$	(PM + $M_{\frac{7}{6}}$)	
M. de Blainville	. .	$I_{\frac{4}{4}}$	$C_{\frac{1}{1}}$	$PM_{\frac{3}{3}}$	$M_{\frac{3}{3}}$
Prof. Owen	. . .	$I_{\frac{3}{3}}$	$C_{\frac{1}{1}}$	$PM_{\frac{4}{4}}$	$M_{\frac{3}{3}}$

As to the lower teeth in the Lemuridæ, we certainly find the first premolar *very* large and caniniform, but I think you will have little or no difficulty in noticing how decidedly the canines differ in form from the incisors. But, independent of this difference in form, we have another point in our favour. The number of the teeth which separate these canines is not uniform among the Lemuridæ, thus while usually there are four, we find in the genera *Lichanotes* and *Tarsius* only two, *i.e.* the lateral incisor on each side has been suppressed.

As examples of the varied forms of the canines, even when well developed, I bring before you those of the tiger, walrus, hippopotamus and wart-hog.

Taking next, for convenience sake, the outermost group, the molars, these are in the deciduous series whose teeth which lie beyond the canines, or the place these should

occupy. While in the permanent series, they are those teeth which come in beyond the position of the temporary molars, and so have had no vertical predecessors.

In this group we again return to reason, and do not insist on form and function. They may be either broad, flat-crowned teeth, adapted for grinding, as in the Proboscidea and most Ungulata, studded with sharp cusps, as in the Insectivora and Cheiroptera, sharp knife-edged, as in the lower molar of the Felidæ, or simply tuberculated, as in those of man and other omnivorous species.

Taking now the penultimate group, the premolars, we may define them as those teeth which separate the canines from the molars. They have, as a rule, succeeded temporary molars, and are usually of simpler form, not only than the molars behind them, but also those which they succeeded. In very many cases, such as most of those species which have $PM_{\frac{4}{4}}$, the first has had no predecessor, and has been by many classed as a temporary tooth; this view receiving some support from the fact of its being in many species short-lived, but in others, as the Ursidæ, it remains doing service long after the two middle premolars have dropped out.

The confusion caused by thus regarding them is well shown in Mr. C. Tomes's valuable manual; thus at page 320, the formula for the horse is given as $I_{\frac{3}{3}} C_{\frac{1}{1}} PM_{\frac{4}{4}} M_{\frac{3}{3}}$; on page 325, that for the pig is $I_{\frac{3}{3}} C_{\frac{1}{1}} PM_{\frac{3}{3}} M_{\frac{3}{3}}$ (corrected in figure 139); on page 331, that for the hippopotamus is $I_{\frac{2}{2}} C_{\frac{1}{1}} PM_{\frac{4}{4}} M_{\frac{3}{3}}$; the premolars being in reality alike in number in all three, only in the pig he has classed the first as a deciduous tooth. In the Marsupialia all premolars but one have had no predecessors, the deciduous dentition being limited to $M_{\frac{1}{1}}$.

In most of the ruminants the premolar is in form just half a molar, while in the horse and in the rodents it is as complicated and fully as large as a molar.

As in the molars, form and function are in this group passed over (the first in the lower jaw in some cases excepted), and they may be either adapted for grinding, as in the Ungulata and Rodentia, or sharp compressed cones adapted for animal food, as in the Carnivora and some seals, or small caniniform, as in some other species of seals.

In many species, as already noticed when treating of the canine, the first of the premolars in the lower jaw is relatively large and caniniform, and, fulfilling the functions of a canine, has by many writers been classed as such. In the typical Carnivora the last premolar in the upper jaw is so enlarged and modified as to be one of the chief agents in slicing flesh, and along with the first lower molar (which articulates with

its posterior half) receives the name of a sectorial or carnassial tooth.

In connection with these it is amusing, and at the same time instructive, to refer in conclusion to the literature of close on fifty years ago, as showing what absurd confusion the intercalation of function into Dental classification could and did lead to. As just noted, the last premolar above, and the first (in some genera, the only) molar below, are modified in the typical Carnivora so as to fulfil the function of sectorial teeth. F. Cuvier separated them from the other molars and premolars, and classed them as a special group; thus he gives in the formula for the Felidæ (really $PM_{\frac{3}{2}} M_{\frac{1}{2}}$) false molars $\frac{2}{2}$, carnassial teeth $\frac{1}{1}$, tuberculous molars $\frac{1}{0}$. Of the two he classed together as carnassieres, the upper had had, and the lower one had not had, a temporary predecessor; just as in the Oreodon of the two teeth classed as canines by Mr. C. Tomes, the upper had succeeded a temporary canine, while the lower (judging from recent ungulata) had had no predecessor.

I suppose our successors will be as much amused at our confusion as to the canines, as we are at Cuvier's classification of the molars in the Carnivora.

The CHAIRMAN having called for remarks, Mr. J. S. AMOORE said that the subject of nomenclature of teeth, which Mr. Wilson had brought before them that night, was not without considerable interest, and had met with discussion elsewhere than there. One of Mr. Wilson's chief points, as it seemed to him (Mr. Amoores), was in the naming of the canine tooth, the difficulty arising from the fact that the usual definition of that tooth (as being the one immediately behind the intermaxillary suture in the upper jaw, and the one that closes in front of it in the lower jaw) did not hold good in all cases. Undoubtedly, in the past ages, animals possessed teeth which were not characterised by the individual differences that they now are, but as animals themselves became differentiated, so their teeth changed and became so specialised to accommodate their possessors for their particular conditions of life, and having now these individual variations, it was necessary that they should be distinguished from one another. Among these modifications was the development near the front of the mouth, of a tooth longer and more pointed than the rest, enabling its owner to hold its struggling prey with greater security. This tooth, so modified, which is now called the canine, was not identically the same in the different species, hence the difficulty that they were now discussing. Mr. Tomes, referring to this early condition of things, would prefer to get over the

difficulty by including the canines among the premolars, and in describing a dentition would speak of such and such an incisor or premolar as being caniniform or *a* canine tooth, referring merely to its shape and function. At the same time Mr. Tomes did not advocate abolishing the term, both on account of the inconvenience it would cause, and from the fact that that particular tooth was very commonly so modified in the Mammalia. This was perhaps rather evading than meeting the difficulty, at the same time, when they considered these two points, viz. the generality of the modification and the confusion that would be caused by attempting to alter it, he thought Mr. Tomes took a very common-sense view of the question. Mr. Wilson, on the other hand, looking at the majority of mammalian dentitions as they now are, finds that the tooth which is usually recognised as the canine when present is very generally caniniform; he would therefore retain the term, and name the tooth which appears in that position a canine, irrespective of its shape and function, and when speaking of exceptional dentitions, would, he (Mr. Amoores) presumed, make some such remark as, the canine was small, but its functions were fulfilled by a modified incisor or premolar, as the case might be. This, it seemed to him, was somewhat arbitrary when dealing with a descriptive name like canine. Mr. Wilson certainly advanced some good arguments in favour of his views, notably he thought the one in which it was shown that the term incisor, a descriptive name also, was applied to the tusks of the elephant, and that without raising an objection. This view of the case certainly simplified matters very much, and as rules were formed for the number and not the exception, he thought it had very much to commend it. The adoption of this plan would certainly cause less alteration in the existing state of things than the other, at the same time it did not appear to him to be so scientific.

Messrs. CORMACK, WATSON, and FINLAYSON having also made a few observations,

Mr. WILSON, in reply, said he strongly objected to the inconsistency in the treatment of the several groups as to form and function. If Mr. C. Tomes had decidedly said that the term canine could *only* be applied to a caniniform tooth, it would have simplified matters considerably; the term canine would then be placed on the same level as the sectorial, and consequently be deleted from Dental formulæ.

If a canine is to be regarded as a specialised premolar, what is it to be in the temporary series? and what becomes of the rule that suppression among the premolar group begins at the *front* of the series?

The thanks of the meeting were accorded to Mr. Wilson for his paper. The Vice-President having resumed the chair, the following communication was then read by Mr. WALTER WHITEHOUSE, L.D.S. Edin., on Pivots.

I have adopted a method of pivoting teeth lately, that has saved a great deal of trouble, and dispenses with the more or less complicated arrangements brought out from time to time to overcome the difficulties attending pivot teeth. The manner of working is the same, whether a tube is inserted in the stump or not ; and I will colloquially describe it.

The first object to be obtained for successful work is to get as great a length of pivot as possible. I take, what is not difficult to find, a Donaldson bristle that has lost the barb, and pass on to it a small ball of wax. The bristle is passed into the canal, and the ball of wax brought up to the orifice and slightly pinched, which gives the length of pin. I take care to pass the bristle up the full length of the fang, and to drill a little short of this. The frequent use of the bristle to ascertain the depth drilled keeps the eye educated in the right direction to incline the drill. Here I would remark what a lot of vexation is saved by keeping drills and all things used for pivots in a separate box or compartment ; if this is not done it will be found the drill has been sharpened smaller or lost its cut over getting out an amalgam filling, &c. There seems more tendency to get irritable and anxious over pivots than any other operation on the mouth. The canal drilled, I have *ready at hand*, $\frac{3}{4}$ in. of pin wire, with a small oval disc of platina foil soldered with as small a piece of solder as possible, at just a little less than $\frac{1}{8}$ in. from one end. I then adjust the length of the pin, burnish the foil over the stump, and cut off with scissors the superfluous. I now take a Stent's impression with the pin in the root. The pin fitting tightly to the root, the Stent comes away without it. The impression is allowed to cool without being wetted. I withdraw the pin from the root, and it will be found easy on trial to place it in position on the impression without bending the foil. The impression lies on the table ; with a small point in one hand, I lightly hold the pin in position, and with another point made hot I tack it to the Stent compo. at the lingual margin of the foil, where accuracy of impression is not wanted, or should it be, as in the case of the fitting of a tube tooth, merely touching the foil with a hot spatula will make it stick to the Stent sufficiently, if thin plaster is poured without tapping ; the plaster model is opened out ; the tooth can now be fitted to the model and completely finished with perfect accuracy in the workroom (a great consideration), and all difficulties as regards the

direction of the pivot overcome. Before commencing to fit the tooth I carefully cut into the plaster model at what would be the apex of the root, and free the pin quite half its length, to be able to push the pin and tooth off the model for soldering without touching the foil. In plate-work I adjust *the pin to the root*, and *the plate to the mouth*—the pin showing through the plate the $\frac{1}{8}$ of an inch—not more, or success will not be obtained. An impression is taken, I carefully put the plate into the impression before quite cold, to ensure getting it into its place. The pin is then taken from the root and put gently into the hole in the plate. I mix a little sand and plaster to put on the pin and plate, and when hard the Stent is softened, the plate withdrawn, and the pin soldered. It will be observed in this proceeding it is not necessary to file the pin loose and then resort to some means of making it fit the stump tightly again, as at present usually in vogue.

Mr. FINLAYSON exhibited a good specimen of cystic tumour attached to the roof of a lower molar.

The Chairman then intimated that next meeting, January 11th, would be a conversational one, the subject of conversation being Gold Fillings. Mr. Campbell, of Dundee, would introduce the subject, and a Clinic with the Electric Mallet would be given by his assistant, Mr. Andrews. The hour of meeting would be 6.30.

STUDENTS' SOCIETY OF THE DENTAL HOSPITAL OF LONDON.

ORDINARY MEETING, DECEMBER 11TH, 1882.

ARTHUR S. UNDERWOOD, Esq., M.R.C.S., L.D.S., President,
in the Chair.

Mr. P. Cicenk was proposed for membership.

Messrs. Magendie, Gabriel, and Mundell were elected members of the Society.

Casual communications were made by Messrs. W. Hern, M.R.C.S., L.D.S., Robbins, L.D.S., Newland Pedley, M.R.C.S., L.D.S., Petherbridge, and Dorey.

The PRESIDENT then called upon Mr. E. Latchmore for his paper on "Necrosis," which will be found on p. 68.

A discussion followed in which the following gentlemen

took part: the President, Messrs. W. Hern, M.R.C.S., L.D.S., C. Robbins, L.D.S., A. M. Fox, and, W. Harrison, L.D.S.

A vote of thanks was accorded to Mr. E. Latchmore for his excellent paper.

Dental News.

APPOINTMENT.

MR. FRED S. PEALL, L.D.S.I., has been appointed Hon. Dental Surgeon to the Rochester Diocesan Home, Brixton Rise.

ERRATUM.—In our notice of appointments in 'our issue of the 1st inst. there appeared the name of Mr. William B. Barrow as Dental Surgeon to the Vale House Orphanage, Everton, Liverpool, it should have read Mr. Willson B. Burrows.

Correspondence.

[We do not hold ourselves responsible for the opinions expressed by our Correspondents.]

To the Editor of the 'British Journal of Dental Science.'

SIR,—Having had the other day to pivot a tooth on an unhealthy stump, without the patient being able to give the time necessary to get it into a healthy condition, I devised the following method of overcoming the difficulty and doing away with the danger of abscess and swollen face, and which, I think, may be useful to others when similar cases present themselves. The crown used must be a flat tooth mounted on plate in the ordinary way, but instead of using wire to retain the pivot in stump I have some gold plate drawn through draw-plate into tubing, a little stouter than pin wire, with the hole running through it sufficient to allow of

the introduction of a medium-sized needle. After having soldered the tubing into the plate file down flush on lingual surface of plate as with wire, but before soldering on tooth fill up the hole in tube with whiting, though should the solder flush over whiting it can be easily drilled out with fine broach or flexible drill on engine. The result is a drainage tube not large enough to be clogged with food, but large enough to allow any gas or serum that may form at apex of root to escape, and so avoid an alveolar abscess, the not unfrequent sequela to pivot cases. Hoping I have made myself clear,

I am, &c.,

J. LEWIS ROBERTSON.

13, Royal Crescent, Cheltenham;
December 23rd, 1882.

To the Editor of the 'British Journal of Dental Science.'

SIR,—Allow me to bring under the notice of the members of the Dental profession through the medium of your Journal that a Subscription has been opened in aid of Mrs. Mamini, the mother of the young man who lost his life through the explosion of a Nitrous Oxide bottle, and that contributions will be thankfully received by Messrs. G. Barth & Co., 54, Poland Street, and

Yours faithfully,

ALEX. CLARKSON.

28, Bartlett's Buildings, Holborn.

Amounts already paid :

A. Clarkson	.	.	£10	0	0
G. Barth & Co.	.	.	10	0	0

ROYAL PORTSMOUTH, PORTSEA, AND GOSPORT HOSPITAL.

Report of cases treated by me from January to December,
1882.

Teeth Extracted	746
" under Chloroform	7
Stoppings	38
Advice Cases and Sealing	134
Irregularities of the Teeth treated Mechanically.....	29
Transplanting	1

Total..... 955

W. H. KIBTON, L.D.S.R.C.S. I.,

Honorary Dental Surgeon.

QUARTERLY REPORT OF CASES TREATED AT THE
DENTAL HOSPITAL OF EXETER,

FROM OCTOBER 1ST TO DECEMBER 31ST, 1882.

Extractions	Children under 14.....	350
	Adults	780
	Under Nitrous Oxide and Ether.....	47
Stoppings	With Gold	30
	„ White Foil	13
	„ Plastic Material	199
Miscellaneous (Irregularities of the Teeth, Scaling, &c.).....		166
Total.....		1585

HENRY B. MASON,
Hon. Sec.

MONTHLY REPORT OF CASES TREATED AT THE
DENTAL HOSPITAL OF LONDON,

FROM DECEMBER 1ST TO DECEMBER 31ST, 1882.

Extractions	Children under 14	230
	Adults	638
	Under Nitrous Oxide	261
Gold Stoppings.....		111
White Foil ditto.....		1
Plastic ditto.....		429
Irregularities of the Teeth treated mechanically.....		91
Miscellaneous Cases.....		254
Advice Cases.....		97
Total.....		2112

W. F. CORNELIUS,
House Surgeon.

MONTHLY REPORT OF CASES TREATED AT THE
NATIONAL DENTAL HOSPITAL,

FROM DECEMBER 1ST TO DECEMBER 31ST, 1882.

Number of Patients attended		1168
Extractions	Children under 14.....	236
	Adults.....	464
	Under Nitrous Oxide	76
Gold Stoppings		45
Sheets of Gold used, independent of Pellets.....		70
Other Stoppings		235
Advice and Scaling		102
Irregularities of the Teeth		72
Miscellaneous.....		231
Total		1461

FRED. WM. BATE,
House Surgeon.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 82, Mortimer Street, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
- . It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
4. All communications relative to subscriptions and advertisements are to be addressed to the Publisher, Mr. J. P. Segg, 82, Mortimer Street, Regent Street, London, W.
5. The Journal will be supplied direct from the office on PREPAYMENT of subscriptions as under:

Twelve Months (post free) 14s. 0d.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skliros, 82, Mortimer Street, Regent Street, W. A single number sent on receipt of seven (penny) stamps.

ANSWERS TO CORRESPONDENTS.

- "J. T. F."—A written declaration is given to the College, and should, therefore, not be violated.
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Communications have been received from Messrs. Bowman Macleod (Edinburgh), Lewis Robertson (Cheltenham), T. H. Coleman (Wrexham), H. B. Mason (Exeter), Trude Fripp (Willesden), J. Cornelius (London), Ed. Latchmore (London), Fred Bate (London), Alfred Gear (Clapham), Fred. S. Peall (London), Wilson B. Burrows (Liverpool), Ash & Sons.

BOOKS AND PAPERS RECEIVED.

'El Progreso Dental.' 'Pharmaceutical Journal.' 'Southern Dental Journal.' 'Transactions of the Odontological Society.' 'British Medical Journal.' 'Keone Odontologique.' 'Transactions of the Odonto-Chirurgical Society.' 'Medical Times and Gazette.' 'Cosmos.' 'Glasgow Medical Journal.' 'Lancet.'

NOTICE.—We desire that it may be clearly understood that our pages are open to all for free expression of their views on matters connected with our profession. We only ask for terseness of expression and MODERATION IN TONE.

When otherwise unobjectionable, difference of political or other opinion will never be regarded by the Editor as a disqualification for the admission of any communication to the pages of the **BRITISH JOURNAL OF DENTAL SCIENCE.**

British Journal of Dental Science.

No. 361. LONDON, FEBRUARY 1, 1883. VOL. XXVI.

A CONSIDERATION OF SOME OF THE CAUSES WHICH GIVE RISE TO DENTAL DECAY.*

By ALFRED CARPENTER, M.D.

GENTLEMEN.—When I consented, at the request of your President, to address you this session, I somewhat underrated the impotence of the work I undertook to perform. I ought to have hesitated before agreeing to do a duty which involved something more than the expression of my own views, upon points regarding which I might feel myself competent to advise or instruct you. But having accepted the duty, it would scarcely be in accord with my ideas of an Englishman's character if I did not attempt to do the work I had undertaken to perform. I propose, therefore, to follow up the line of thought which is ever in my mind, upon the causation of disease, and to consider that subject in relation to the teeth, on the principle that prevention is, in a large proportion of cases, better and easier than cure; and also that there is a field for observations and practice here, as well as everywhere else in the domain of medicine and surgery. This will especially apply to caries and several other maladies which naturally come to the notice of the Surgeon-Dentist in the practice of his profession. Are diseases of the teeth more common in our time than they were in the early days of civilisation? Has the artificial life in which we live now, seriously damaged the dental organs, and has it promoted their earlier decay than was the case in the time of our forefathers?

To solve this question we must go to ancient history.

Diseases of the teeth were not unknown to those nations regarding whom we have early records. We gather from Herodotus that there were Dentists in Egypt in the time of

* Read before the Odontological Society of Great Britain, November 6th 1882.

the Pharaohs, and it is said that Belzoni discovered artificial teeth in the sarcophagi of the Egyptians. Erasistratus, Hippocrates, Heraclides of Tarentum, and other Grecian writers, speak of diseases of the teeth as if they were not uncommon in their days. Whilst Celsus describes the Dentist's duty very accurately, and gives us a clear insight into the system in operation among the Romans in his time. Galen also is particular in his descriptions of Dental diseases. Dental caries was therefore common enough among the ancients, and from all that we can learn, these diseases are not a new class, and do not therefore show a new departure in pathology. Yet there is sufficient evidence to tell us that luxury, indolence, and vice, tend very much to promote the development of such diseases, and the foundation for those conditions which produce decay of all kinds in the dental organs, as well as elsewhere. This evidence is given by the state in which the teeth are generally found in the mummies of ancient Egypt and in the jaws of those skeletons which have been preserved to us from the early days of Christian sepulture.

Disease in the teeth was the exception in those times, whilst in our day it is the rule. It may be true that those teeth which decay had touched during the lifetime of their possessors had been unable to stand against continuing decay after death, and that sound teeth alone remain in their original form to our time. This is not, however, all true, for decayed teeth are sometimes found. Teeth giving evidence of caries which had existed during the lifetime of their owners do continue to remain *in situ*. There would be also vacancies in the jaw-bone indicating the position of the absent teeth if such decay had taken place. According to the accounts of some travellers, the majority of Egyptian mummies which are unrolled to-day exhibit perfect sets of teeth, and the majority of those jaws which have been examined in some of the catacombs in which the early Christians were buried, are perfect; whilst it is the exception now to find a middle-aged person who has not lost many of his dental appendages.

Before proceeding to discuss the principle upon which decay may depend, I will run over a list of the conditions which, in my opinion, may be first causes for the foundation of change, and for the continuance of active decay. These causes are very various, and each may be distinct in itself or conjoined with one or more in the class and thus a kind of hybrid may be produced which at present prevents a good classification.

In the first place, there cannot be any doubt as to the effect

of inherited tendencies,—some state which has been engrafted into the constitution by the acts, the habits, or the vicious conduct of preceding generations. This state may give rise to irregular developments, as to shape and size, or the order in which the teeth are set in the jaw-bones introducing a race of beings in which the new condition becomes all but natural. Or it may show itself in those forms of constitutional disease the presence of which does not appear to have arisen in the earlier days of the world, as far as we can learn from ancient history, for syphilitic conditions which are common now, find no representatives in the Egyptian tombs. These conditions descending in later times from grandfather to grandson, or even from ancestors more distant still, show the taint, in the unnatural form and early decay of both the temporary and permanent sets of teeth. These syphilitic states produce their first causes by setting up alterations in the protoplasm or primary germ of the new life; for when the tooth is developed, as I shall show later on, conditions and consequences arise for which the parent must be responsible. A similar condition is met with to some extent, though not with so determined a result, in those persons who have had gouty ancestors. Children who have inherited a gouty constitution suffer, to some extent, according as to whether that gouty state was also inherited by the parent himself, or purchased by his own acts. In some cases it falls with double vengeance upon the child, for the parent has not only inherited the condition, but he has added to it by his own love of vicious feeding and strong drink. The young man who makes a god of his belly, and thinks more of his eating and drinking than of his children's welfare, or of his own future state, may procreate a generation of persons who may suffer much from dental as well as from other defects. The pains which the children innocently endure in this world are, to my mind, the punishments which will have to be borne by the father in the next. They assist to make up the measure of that future which we are sometimes taught to regard as the result of the wrath of our Maker for our own sins whilst in reality it is simply the sequence of our own acts and deeds. This sequence arises in consequence of the immutable laws which the Creator has given to matter, and is not as the result of the anger of a revengeful Deity.

Besides syphilis and gout, both of which have a direct action upon cutaneous surfaces, and, as I wish to show, a special action upon the teeth, we have constitutional diseases affecting development of the other parts of the primordial utricle, or first layers of the original protoplasm. This shows itself in the defective nerve power, and in the

inefficient nutritive force which promotes the growth of the homunculus. Then there are all the consequences of accidental damage or injury to the foetus, or to the young child, which may produce immediate effects, or show themselves later on in life,—causes which have been in temporary operation only, or which may have been continuous,—causes which have produced immediate results, or which have only developed their natural sequences years after such causes have ceased to be—causes connected with the simple wear and tear of the organ itself, and which have been induced by a wrong kind of food, by defective muscular action, one muscle acting stronger than its fellow, or by an improper action on the part of the nurse or guardian, or perhaps of the family doctor in prescribing dangerous remedies at the wrong time, and in wrong doses—or causes which have been induced by the cupidity of man in adulterating food with articles which were not intended for the human teeth to grind, or the human stomach to digest. All these causes and conditions operate to provide work for the Dentist, and all are more or less preventible in future generations, if not in our own time.

I need not detain you by a discourse upon the chemical constituents of the teeth. The nature of those constituents, as well as of bone in general, are well known to you. I will simply recall to your mind the fact that phosphate of lime is the principal inorganic matter in the substance of the teeth, but that if all the mineral matter is removed from a tooth, there is a skeleton of organic matter remaining, which is equal in volume to that of the tooth itself. But that whilst dentine contains some 28 parts per cent. of organic matter, it falls to less than 3 per cent. in the enamel. I may also remind you that the *crusta petrosa* is closely allied to, if not identical with, true bone. You are already fully acquainted with the course which is taken in the development of the teeth—the first step in that development being a visible thickening (in the sixth week of foetal life) of the epithelium which covers the free border of the jaw; that a groove which has been styled the primitive dental groove forms upon it, and that it is from the epithelium in this groove (from a part of the system which therefore corresponds to the skin) that the teeth have their primary origin; that the deeper layers of this epithelium send processes down into the substance of the mucous membrane, which is indented by a papilla, but the sides of the indentation are separated by loosely arranged star-shaped cells. The embryonic tooth is the speck which is now entirely enclosed in its dental sac. The papilla moulds into the

shape of the crown of the tooth; the epithelium upon it in the course of time changes into enamel and dentine. The latter increases in thickness by addition to its interior, which is in close contact with the vessels from which it soon gets its nourishment. Ossification commences by the deposition of calcareous matter in the cells of the membrane at the top of the pulp. It appears in the ivory membrane first, and soon afterwards is seen in the cells of the enamel membrane; for so these two layers are styled by some physiologists. The point of most importance in this description—for there are different versions of the process—is that the teeth are epithelial structures, and differ to some extent from bone, like that of the thigh bone, in their liabilities to disease, for the latter are derived from a different part of the skeleton, and are not liable to those mischief which the teeth suffer from.

A study of the teeth among the lower animals is especially interesting to the searchers after first causes, and throws a flood of light upon development. Among some of the invertebratæ the teeth are clearly gastric, being a part of the stomach. In this position they do not depart from their epithelial character, for the mucous membrane of the abdominal tract is as epithelial as is the skin, and has the same origin. These teeth are composed of chitine impregnated with lime and silica. The teeth of the sea urchin are made up of prisms of carbonate of lime, with leaflets interspersed between the prisms, and in them we find a fine plexus of anastomosing canaliculi. It is among the shells of the mollusks that we first find a division into an outer prismatic, or fibrous, and an inner laminated tissue, similar to that in vertebrate teeth. Among the terebratulæ we find (according to Dr. W. B. Carpenter) tubes traversing the substance, forming branched horizontal channels, sometimes connected with rounded cavities, which seem to be analogous to the lacunæ and canaliculi of the *crusta petrosa*. The shell of the mollusk, which has become calcified, corresponds to the epidermis of the higher animals, and thus their teeth have the same origin as those of the vertebratæ, viz. being epithelial. The prism-like appearance is due to the cellular structure and the transverse striæ corresponding to the thickenings of the cellular membranes, where the layers come into contact with one another. My great namesake states that in his opinion the calcareous network which is seen in the shells of the invertebratæ generally, corresponds to the fibrous structure of the cutis of the higher animals, and which has obtained a calcified condition.

Let us now ask a question or two as to epithelium, and the duties it has to perform.

1st. It is protective; of that there can be no doubt.

2nd. It is excretory.

That which applies to the whole may apply to any part. The nails and the hair are undoubtedly epithelial, and equally liable to changes which indicate alteration in the primary cells from which those organs spring. There is a difference, however, between the teeth on the one hand, and the hair and nails on the other, inasmuch as the latter are made up principally of organic substances, and are of a horny nature which is almost indestructible; it is allied to, but slightly different from, gelatine, and is sometimes styled keratin. This material therefore occupies the position of indestructibility which is held by the enamel of the teeth, but which in the latter case is mainly due to inorganic matter. Its chemical character is not clearly set out, but whilst enamel has a minute portion of organic matter in its composition, horn and nail have but little inorganic deposit, perhaps even less of inorganic matter than enamel possesses of the organic. There is thus a curious though antagonistic analogy, the minute quantity of organic matter in the structure of enamel is the channel by which the life of the tooth is kept up; and a dead tooth, like a dead shell, is somewhat different to one that is still in direct and living contact with the body of its owner. A necrosed tooth will easily take up decay. If an expert examines the collection of a conchologist, he will be able without hesitation to point out in the collection those shells whose original bearers had died a natural death (and which had been afterwards exposed to external influence as a sequence to that death), from those which had been taken alive. A shell picked up on the seashore without a living inhabitant is quite different to those which are taken with the animal living in them, and which kind alone make fit addition to the collector's drawers. Changes take place very rapidly in the one kind of shell which do not show themselves at all in the other. The organic matter of the living shell is a reality, and it lives with the animal itself. The changes which take place in the dead shell are rapidly promoted by friction, by the action of the air, and by water acting upon the organic matter which, being deprived of its vitality, allows of alterations taking place in it to which it was able to furnish a complete barrier when in the living state, and in absolute union with the living animal, although it is not permeated by blood-vessels, and there is no evidence of nerve tissue in its substance. The friction on the seashore

is not greater and the action of salt water is not different upon the dead shell to that which it has upon the living shell and animal together. Yet these actions are operative on the dead shell in the one case, and are without injurious effects in the other. The only difference between the two shells is that of the vitality of the organic matter in the one case, and its absence in the other.

(To be continued.)

ON SOME SCIENTIFIC PROBLEMS OF DENTAL SURGERY.*

By Mr. C. S. TOMES, F.R.S.

It is a reproach of long standing that the method and practice of medicine are unscientific, and that they are merely empirical, whilst the practitioners of medicine in the early days of the separation between medicine proper and surgery in their turn looked down upon the surgeons as even less scientific than themselves. It was not long before the surgeons made such strides in their art that they could claim full equality with the physician, as rendering useful service to their patients; but, more particularly where handicraft forms an important element in treatment, there long lingered a tendency to draw a distinction between the so-called "practical" and the "scientific" man, to the detriment of the latter. Other and far abler pens than mine have demonstrated the fallacy which underlies such distinctions, by pointing out that "scientific" knowledge differs from any other knowledge in no respect but in that a rigorous accuracy of fact is demanded, and vague beliefs incapable of proofs are rejected; so that to say a word against science in our practice is simply to plead the advantages of ignorance.

The immense triumphs which have been achieved by modern surgery, triumphs which are being added to every day, are the outcome of the pursuit of more rigorously scientific methods, and if we in our specialty of Dental Surgery would advance likewise, we can only hope to do so by following a similar course. So much I have said by way of prelude, in order to remove any impression that might

* Read at the Annual General Meeting of the British Dental Association, at Liverpool.

exist that "scientific problems" lead to no practical result. And I am sorry to say that a review of recent Dental literature brings sadly into prominence the lack of true scientific spirit amongst our workers; it is voluminous enough, it is positive enough, but the voluminousness and the positiveness alike are the outcome of insufficient observation, insufficient experiment, and insufficient exactitude of thought. Take for example the discussion as to those phenomena of gold which we term cohesiveness and adhesion, or take the much discussed questions arising from amalgams and their defects; and of all that has been written there is not one hundredth part which is worth reading, or which can possibly carry conviction to any one's mind. It is always, "I am sure," "I have all my life known," or something to that effect, and very rarely an experiment, or statistics, or anything convincing. And when we have statistics or experiments, they are too often such as to demonstrate by internal evidence that little reliance can be placed upon them. In this depressing state of things it has seemed worth while, although having little in the way of research to communicate, to formulate exactly what we want and need to know about some of the conditions we are most often called upon to treat, namely, about alveolar abscess and its causes.

Surgeons, and physicians too, are at the present time largely engaged in investigating what is termed the germ theory of disease, and this has, as you all know, a most practical bearing upon treatment. That aspect of the question which mainly concerns us may be broadly put thus; whether certain morbid conditions can and do arise within the body itself, or whether they are imported from without, in the form of germs or what not. It would be entirely out of place to here attempt to give any outline of the basis upon which antiseptic surgery rests, but it may be well to remind my hearers of some few of those experiments and observations which bear most directly upon the problem before us.

It is thoroughly well established that organic fluids or tissues, though eminently susceptible of decomposition, do not undergo putrefactive decomposition without the help of organisms, bacteria, and micrococci, which grow in them, and act apparently as ferments. If these are excluded, as they are from an aseptic flask, or are killed by boiling, as is the case of tinned meat and vegetables, no putrefaction takes place. According to Dr. Ogston micrococci do not produce putrefaction, and flourish best when removed from the air; on the other hand, bacteria cause stinking putrefactions.

Portions of tissues cut from animals just killed and passed, with full antiseptic precautions, into an aseptic flask may be kept fresh for an unlimited time; and this leads to the inference that the germs of micrococci and bacteria do not circulate in healthy blood, and do not exist in healthy organs. But introduce a trace of dust into the flask, and the whole contents at once putrefy, whilst the putrid fluid is found to swarm with organisms. So also the discharges from a wound kept aseptic do not putrify, and the patients do not get pyæmia or septicæmia, except through the failure of the antiseptic precautions. Another most instructive experiment is being performed every day on a large scale. In the south of Europe the castration of male animals is effected by an operation called "bistournage;" roughly speaking, this consists of twisting the testis upon the spermatic cord, so that without any exposure to external influences at all it is killed, and instead of putrefying it withers away. This portion of tissue, killed by the severance of its vessels, is analogous to the pulp of a tooth which has been killed by a blow, to which I shall revert. But Professor Chaveau has carried this experiment farther; he has introduced bacteria into the veins of animals upon whom bistournage was about to be performed, with the result of bringing about the decomposition of the killed testis, which then became the cause of profuse suppuration; so that the proof is in this case exceedingly complete that a portion of tissue may be devitalised without decomposing and without setting up inflammation around it to any material extent so long as it is not exposed to external influences; but once introduce septic organisms into it, even by way of the circulation, and this happy result is no longer attainable.

One might multiply examples of this fact to any extent, but I will merely remind you that surgeons, in subcutaneous operations, have for years availed themselves of the immunity from subsequent ill-results afforded by the avoidance of any exposure to outside contamination. In septicæmia, micrococci may generally be detected in the blood, as they also may in several morbid conditions, which do not concern us now.

It some time ago occurred to me that we had, in the numerous cases of abscess which come before us, the opportunity of studying, to considerable advantage, the share which organisms take in these productions, but I have not since been able to make my observations sufficiently numerous to draw any general principles from them. So far as I know there is no literature on the subject of the connection of organisms with dental abscess, with the exception of allusions

to alveolar abscess in a report by Dr. Ogston ('British Medical Journal,' March, 1881). He found micrococci and bacteria in the pus from alveolar abscesses; and generally speaking, he found organisms in the pus of all acute abscesses which he examined, but did not find them in that "cold" abscesses. We are not told in his paper of what nature the alveolar abscesses examined were, whether acute or chronic. Amongst the many important results in Dr. Ogston's report, which will repay the most careful study, is this: that injection into animals of pus which contained no micrococci produced no result, but that of pus containing micrococci, or of micrococci artificially cultivated, always produced abscess, though if thoroughly carbolicised it did not do so.

The pulp chamber of a tooth is a cavity which, prior to the occurrence of caries, is absolutely isolated from external influences, and has but one channel into it, namely, its apical foramen: even after the occurrence of caries it can be tolerably easily and completely closed. And hence it is a particularly favorable place for investigations of this nature, and, it might be hoped, would lead to results of wide application.

It has been shown by Messrs. A. Underwood and Milles that bacteria are to be found within the substance of carious dentine, and this fact remains established, whatever view may ultimately be adopted as to the extent of their influence upon the morbid process. The observation that bacteria are not to be found within healthy dentine, which, therefore, even in the absence of enamel, constitutes an efficient barrier, and that they are to be found in carious dentine, is one that has an important bearing upon the present inquiry.

For our present purpose we may consider alveolar abscess as occurring under three sets of conditions:—1. Where the pulp of a tooth has been somewhat nearly approached by caries, a filling has been inserted, and, after the lapse of an uncertain time, the tooth pulp is found to be dead and decomposed. 2. Where the pulp has been killed by a blow, with no breach in the hard tissues of the tooth. 3. Where, after the removal of the *débris* of the pulp, and filling or dressing of the roots, abscess recurs after the lapse of considerable time and without failure of the filling.

I have placed first death of the pulp as a sequence to caries and filling of the tooth, because the problem there involved is a simple one, and also because I have more positive evidence to offer upon this set of conditions than upon the others.

I have purposely excluded all observations upon cases in which an alveolar abscess had already broken, because in these

there was a communication with the exterior of the gum, through which the germs might have entered. Of cases in which I was able to open up the pulp chamber, prior to the occurrence of abscess, I have only met with six since my attention has been directed to the subject, and in every one of these six I found the offensive fluid *débris* to contain bacteria and micrococci. But it is not always easy to be certain whether micrococci are or are not present, as there is always a great deal of granular matter which renders their discrimination less certain than that of the rod-shaped forms. As I have before mentioned, it is not difficult to account for their presence, seeing that carious dentine affords a home for them, and that there may have even been a minute actual exposure of the pulp. But it is a question of great interest, and of practical importance too, to discover, if possible, what share the organisms have had in provoking the inflammation of the pulp which has preceded its death, and in the subsequent changes in the way of its decomposition.

In the admirably clear lecture of Professor Burdon Sanderson on "Inflammation" (reported in the 'British Medical Journal' for April, 1882), it is related as proven that in the cornea, its epithelium being damaged, an inflammation springs up which is due to the entrance of germs and their multiplication in its substance, and it is worth noting that in these exceptional cases in which the early extraction of the tooth has, for some reason or other, been resorted to, and we get the opportunity of examining the pulp prior to its entire death, we always find that the point of inflammation and disintegration corresponds to the point of complete or approximate exposure, and that a stinking decomposition has been set up at this point, while the rest of the pulp is alive and, as far as we can see, healthy, beyond this zone of inflammation. So far it looks as though something getting in had done it, as though microzymes had entered, and the inflammation were comparable to that in a cornea of which the surface had been damaged; actual observations on the presence of bacteria at this stage are, however, wanting, and they are much needed. I have only a single observation to record, in which I found the bacteria abundant.

On the other hand, as Professor Burdon Sanderson well insists, the view that all inflammations are due to organisms is quite untenable, and inflammation may spring up at once in a part which has been subject to damage, without the possibility of the entrance of germs; so that we are by no means driven to the absolute conclusion that the bacteria which I found were the causes of the inflammation. But these inflammations which are the result of physiological

"damage" to a part, elsewhere come to a kindly ending. In his own words, "an uncomplicated inflammation is neither reproductive nor infective, neither benign nor malignant; if it has any tendency it is to leave off as soon as the occasion for it passes." Therefore the tooth pulp, supposing that it really has inflamed before its death, should not on that account give rise to products capable of poisoning the parts about the apical foramen.

At p. 293 he says:—"I endeavoured to show on the ground of experiment, that the only inflammations to which minute organisms stand in relation are those which, from their proved dependence on previously existing inflammation, may be properly termed 'secondary or infective; and consequently that the organisms in question were not so much mischief-makers as mischief-spreaders. That is to say, although an inflammation may come into existence without their aid, their presence communicates to it, after it has come into existence, the power of reproducing itself in previously healthy tissues, whether by extension or dissemination." These facts he sums up:—" (1) That the exudation of a normal inflammation is not infective; (2) that no organisms endowed with inflammation-producing functions exist in the atmosphere or in ordinary aqueous liquids with which our bodies come in contact; (3) that whenever an inflammation becomes infective it owes that property to chemical change in the exudative liquid, of which the presence of microzymes is a necessary condition." Now if we attempt to apply these canons to Dental diseases, we are at once struck with the fact that the contents of the pulp chamber of a tooth are in a sense virulently infective, for the escape of the smallest quantity from the apical foramen sets up a most violent inflammation and abscess, which, however, only very rarely spreads further (though in one of my cases in which the patient was long in seeking relief there was almost erysipelatous inflammation of the face attended with considerable fever) but there is, so far, no difficulty in understanding how the tooth pulp may have complied with the conditions laid down by Professor Sanderson, as to a prior inflammation, the exudation of which, with the presence of organisms, has become infective. But it is a matter of some moment to us to discover, if possible, whether we have most often to deal with an inflammation caused by the invasion of the pulp by microzymes or set up by irritation, for in the one case the profuse and persevering use of antiseptics is indicated, in the other sedative applications, and this point can only be elucidated by very numerous and very careful observations.

Passing now to our second group we have by accident most

instructive experiments brought under our notice not rarely, when the pulps of front teeth which have been severely struck die, although the hard tissues of the tooth are quite intact. Here we have a portion of tissue dead, which has in no way been exposed to external agencies. No germs can have entered it from without, and it is in this respect in the same position as the testis killed by "bistournage," or as a portion of tissue cut out and introduced into a flask with antiseptic precautions. It therefore might fairly be expected to remain mummified without undergoing any putrefactive decomposition; and this does sometimes happen, a case of this kind having come under my own notice since my attention has been specially directed to the subject.* But much more frequently, after an interval of exceedingly variable length, violent alveolar abscess ensues, and on opening up the tooth by drilling into it we find the contents of the pulp cavity stinking, whilst the violence of the alveolar abscess betokens the virulence with which the tissues adjacent to the apical foramen have been infected.

It becomes a matter of the greatest interest to discover whether organisms do or do not play a part in this sequence of events, and the solution of this problem has a bearing on questions far wider than the field of Dental Surgery. And the importance of the experiment is almost equally great, whether it turns out that bacteria or micrococci are there or not. For if there, they must have got there by way of the circulation in a healthy individual, and must have been (1) present in the tooth pulp prior to the accident, or (2) have entered it during the brief period of inflammation which we know clinically to sometimes intervene between the injury and the death of the pulp; or else, if the death of the pulp has been instantaneous, (3) have crept in by the apical foramen subsequently, a hypothesis which does not commend itself as probable.

On the other hand, if, after extended and numerous observations no organisms prove to be there, we shall have proof of a putrefactive decomposition with stinking and poisonous products taking place without the intervention of bacteria or micrococci; in other words, that which, according to the doctrines of modern surgery, ought to be in the condition of an aseptic slough, becoming septic.

One does not meet with these cases very frequently, and

* And since the reading of this paper I have met with two central incisors, the pulps of which had been killed four years previously; there was tenderness and slight fulness over the apices of the roots, and the pulps themselves were coherent, white and sodden, but without any offensive smell. No bacteria were found.

it would require a large number of observations to prove a negative, yet so far I have not succeeded in quite satisfying myself of the presence of either micrococci or bacteria in any case which I have examined; in one case I found a few bacteria, but they were so few and so unequally distributed over the slide, that I suspected their not having been derived from the fluid from the pulp chamber. The question, then, for the present remains open, but I would point out that the occurrence of alveolar abscess after the death of a pulp killed by a blow is very often a slow process, extending over months or years, or never happening at all, whilst an abscess usually follows very speedily on the heels of the death of a pulp which has been nearly or quite exposed.

And whilst it is comparatively easy to find bacteria, or be satisfied of their absence, it is very different with the round micrococci, for the *débris* of these pulps is almost made up of granular material.

The third group of cases are those which are most troublesome in our daily practice, those cases, namely, in which alveolar abscess recurs after we have done what we can in the way of treatment. It is, of course, a familiar fact that if we can pump creasote through the apical foramen and out through a fistulous opening on the gum, that alveolar abscess may be readily and speedily cured in almost every case, and this would seem to point to its being kept up by organisms. As a matter of fact I have frequently found them present in the pus, and again sometimes I have failed to find them; but I attach little importance to this, inasmuch as I have found them abundantly one day, and on the next, the abscess having meantime greatly subsided, have found very few.

The cases, however, which are most important and most troublesome are those in which the roots have been thoroughly treated with antiseptics, and filled, say with cotton wool, saturated with creasote. The tooth has remained quiet for a considerable time, and then becomes tender, and an abscess threatens. On removing the filling the wool from some one of the roots is found discoloured and offensive. It is hardly to be supposed that organisms have got in subsequently to the filling by way of the tooth, so here again we are in face of alternatives; either we have that which is generally believed never to occur, a putrefactive decomposition without the intervention of organisms, or the germs have escaped the creasote, lain latent for a time, and then developed.

It is a familiar observation that cold will provoke an inflammation about a heretofore quiescent dead tooth; this

would be intelligible enough as an instance of a "damage" to a part already perhaps below its standard of health, but whence come the stinking products which leak into the roots of the tooth if there are no microzymes?

And these products we know to be infective, for if in our manipulation we pump anything, no matter how little, through the apical foramen, we set up an acute abscess. Of these cases I have not had an opportunity of examining a sufficient number to draw any conclusions, but I may remark that the late Dr. Dean, in a paper on alveolar abscess read before the International Medical Congress laid much stress on the application of the rubber dam to a tooth in which an alveolar abscess had been cured prior to the removal of the dressing; and he was advocating these "antiseptic precautions," although speaking purely from the clinical point of view. I myself asked him the question, prior to the reading of the paper, whether he advocated this precaution for a theoretical reason, or as a result of practical experience, and he told me purely on account of the latter. He saw, then, from his clinical experience, the necessity of excluding something; of its nature he was uncertain.

On the other hand, if we are contending with living organisms, it is strange that we cannot secure more uniform success, for we are able to bring into play antiseptics with a directness and in a strength impossible elsewhere in the body.

To recapitulate briefly it is believed that:

- (i.) Putrefaction with the development of stinking products depends upon the presence of organisms.
- (ii.) Inflammation may be directly caused by organisms, or it may arise independently of them.
- (iii.) Infective inflammations are associated with the presence of organisms.

And we find that:

- (i.) Tooth pulps nearly exposed by caries inflame, die, putrefy, and infect the parts around the apex of the root, and that organisms are found in the *débris* of the pulp and in the pus of the subsequent abscess.

On the other hand, that:

- (ii.) Tooth pulps never exposed to external contamination die, putrefy, and infect the parts outside them; and that organisms have not, so far, been satisfactorily demonstrated in them.

And again:

- (iii.) The dressings in the roots of dead teeth, under circumstances which would render the multiplication of organisms unlikely, do become saturated with offensive fluid.

But against this last we may set the fact that success in the treatment of alveolar abscess seems to be about proportionate to the completeness with which antiseptics can be brought into contact with all the surfaces concerned.

I feel that I owe this meeting an apology, for bringing before them so imperfect an investigation; but there is one excuse for my doing so, and that is, that it is an investigation which to be at all fruitful of results must be carried out by many observers, and, so far as I know, attention has not been very definitely directed towards it. I hope, for my own part, when my observations have become sufficiently numerous, to publish them in detail, and that, by that time, there will be many others to confirm or disprove them. It may well be that the pursuit of this line of investigation will lead to most practical results in Dental Surgery, for if it be the case that rigid antiseptic precautions are our only road to success, we have excellent means of applying them by the use of the rubber dam. I may mention that I have lately always, when practicable, removed devitalised pulps under a pool of eucalytus oil, so that this may run in as the pulp is removed, and no septic contamination take place during this part of the operation; but as good results are ordinarily attainable without this precaution, it is too soon to speak of its value.

On the other hand, failing a practical result for Dental Surgery, the investigations cannot fail to be of value in throwing light upon a great question of pathology, for the isolation of the pulp chamber of a tooth eliminates a great many of the sources of error and uncertainty which beset similar researches upon other organs of the body.

THE ETIOLOGY OF DENTAL IRREGULARITIES.*

By HY. SANFORD BURTON.

MR. PRESIDENT AND GENTLEMEN.—The subject to which I would invite your attention this evening, is one which appears to me to possess interest of a most absorbing character, and well deserving the fullest investigation. Feeling as I do, the impossibility of laying any claim to originality

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in the consideration of such important matter, I need not apologise for endeavouring to reflect to some extent this evening the opinions of those eminent men who as the result of earnest thought and patient research, have given us the information which it is at present our privilege to possess. To bring before you suggestions as to the causes of abnormalities of every form or character would occupy more time than we have at our disposal this evening. I propose, therefore, to consider more especially those causes productive of abnormalities in the type of the dental arch, and of irregularities of the teeth as to position.

Irregularity in the position of teeth in the human subject is the result of a departure from the normal type, and to a greater or less degree as regards the form and capacity of the jaws; there being at the same time in the teeth no apparent degeneration in outward form and general proportion when compared with teeth of considerable antiquity.

True, instances have been recorded of displacement of the incisors, either congenital or the result of unfortunate habits such as thumb sucking, prolonged use of an artificial nipple, &c.; but, as a rule we find such cases to be few and far between, and scarcely to be looked upon as matters of importance, unassociated as they are with any other peculiarities, neither being indicative of irregularity in the development of their permanent successors. If we examine the normal type of a deciduous dental arch we find, as a rule, the teeth well formed and their positions regular; yet associated with the development of the permanent set, are irregularities of the most astounding character.

To judge of abnormal conditions, it is necessary to be familiar with some standard of normality. In the dental arch, I conceive such a standard to be that ample capacity which admits of the perfect arrangement of the teeth, whether in the elliptic corresponding to the bracheo-cephalic type of skulls, or the round arch synonymous with the dolicho-cephalic form.

To put it otherwise, we may look upon our normal standard as a regular curved line, which although differing in width and degree in various races, will still be an elegant curve, without any tendency to form an angle. Such a type I now present to your notice. All departures from this type must be classified as deformities. Before considering the causes productive of such abnormal and contracted arches which one meets in the present day, the question naturally arises is such a condition on the increase, or, to put it in a different form, is there a greater percentage of such cases as compared with some centuries ago? Unfortunately, we can

but arrive at an affirmative conclusion, to illustrate which, I must refer you to some interesting statistics.

In 1864 Messrs. Cartwright and Coleman made an examination of some 200 skulls in the crypt of Hythe Church, Kent. Those skulls, of which there is no authentic history further than that they had been there for centuries, were of both sexes and all ages. They presented various types indicative of considerable differences in the social scale ; some being well formed, and giving evidence of intelligence and refinement, others showing a low class of intellect, with corresponding animal development.

The maxillæ presented in all instances unusually well developed dental arches. The teeth were remarkable for regularity of position, only two deviations being noticed ; one upper canine shut within the lower jaw on occlusion, and one bicuspid was turned upon its axis ; but in no single instance was there anything seen approaching to that which, under the term contracted arch, is found in the present day.

The average width in superior maxillas was $2\frac{1}{2}$ inches, inferior maxillas $1\frac{7}{8}$ inches, both being in excess of the average in skulls of recent date. In dimension, the teeth appeared to differ little from those of the present day, excepting in the gradually diminishing size from the first to the third molar, which was strongly marked. The statement which I have just read to you, shows how rare were irregularities in skulls of ancient date, and especially the extreme rarity of anything approaching to a contracted arch. As a contrast allow me to quote a statement by Mr. Coleman, the result of a careful examination of 200 mouths belonging to an institution, the inmates of which may be regarded as fairly healthy, namely, the St. Anne's Asylum Brixton, from whose walls are excluded all who are suffering from disease, or even delicacy of constitution. At this institution there were 86 girls and 163 boys, whose ages averaged from seven to fifteen years ; and of these, an examination of the mouths of the number just mentioned taken promiscuously, gave no less than seventy with dental arches contracted or otherwise irregular. This comparison, although too small as regards numbers for any very correct estimate to be formed, may yet fairly lead to the inference that contracted or ill arranged dental arches are much more common now than formerly. Such being the case it behoves us to consider as carefully as time will admit of, the causes conducive to such an unfortunate state of affairs. And first as to the theory of premature extraction of the deciduous teeth. The idea that a too early removal of the temporary teeth affects prejudicially the development of their successors, rests upon the supposition that such action results in the

contraction of the maxillæ. Remove those teeth? Why the jaw will contract! Such remarks have doubtless often been heard by most of us, and it is astonishing how generally prevalent such an opinion is. However, we have only to look upon the matter from a physiological and histological point of view, to prove conclusively that such an argument is fallacious. In the first place, for the removal of the first teeth to cause contraction of the arch, they must be associated with the growth and development of the jaw after their eruption. But no sooner have they been perfected, than nature begins to get rid of them, and upon their removal it is usual to find in them a loss of substance, with a corresponding increase of the same in their successors. Again, if contraction of the jaw were the result of the removal of the first teeth, we should find in those exceptional cases in which infants are born with two lower incisors erupted, that being removed on account of injury caused to the breast of the mother, the permanent lateral incisors upon their eruption at the usual period, would occupy the space of the lost teeth; but such is not the case. How often in some children where there is rapid destruction of the first dentition by caries accompanied by pain, constitutional disturbances and inability to masticate, do we find it necessary, nay even imperative, to remove tooth after tooth until the whole are gone? Or again, in other cases where there is an excess of absorption over production, the teeth loosen and fall out at an unusually early period. Surely, gentlemen, humanity could furnish us with no better examples in which to expect irregular or contracted arches, did such contraction depend in any sense upon the first dentition.

But experience does not bear out such a theory in the slightest degree. Mr. Tomes relates a case in which he removed from a child all the deciduous teeth prior to the eruption of their permanent successors, leaving the mouth for a time edentulous. Nevertheless in due time the permanent teeth developed in perfect regularity of sequence and of symmetry. However the removal of many or most of the temporary teeth may affect the development of the permanent set, there is one thing which perhaps ought to be guarded against, and that is too early removal of the temporary canines. One occasionally sees cases where, from some cause the removal of these teeth has been effected, the space has closed up, and the permanent teeth have been misplaced with every probability of the necessity of using artificial aid to produce a return to their normal position.

Passing on, we come to irregularities the result of accident. Very trifling accidents at the time of teething may be

productive of serious results. A fall may produce a slight inversion of an erupting central incisor, which when further elongated meets the edge of its opposite fellow in the inferior maxilla.

It is the habit of nature to accommodate herself to abnormal conditions to a very great extent, and in this instance it would be easier for the child to throw forward the lower jaw, and thus produce an unnatural bite, experiencing at the same time under the circumstances a greater degree of comfort than by attempting a natural closure, but commencing coincidentally a habit which would probably end in the disorganisation of the whole dental articulation.

But apart from accident, we may have irregularities which are directly traceable to inheritance, and are transmitted from parent to child, this transmission being the result of the same general law of nature which bequeathes to the offspring the form and features of its progenitor. Mr. J. Tomes gives an account of a case in which he found the upper lateral incisors biting inside the corresponding lower teeth in a gentleman, and in three out of four of his children. I am indebted to Mr. Burgoyne Pilling, of Conduit St., for the notes of a case in which there was a hereditary absence of lateral incisors, such absence existing in a parent and five children. I will now submit for your inspection four models kindly lent me by the same gentleman, the three first of which are illustrative of a hereditary contraction of the arch, which you will observe is V-shaped, showing also an abnormal position of the lateral incisors.

In this instance, again, the condition occurred in a lady, her daughter, two grandsons, and a grand-daughter. The last model represents one of the most contracted arches I have ever seen. It is a matter of regret to be unable to show you the lower, which is narrower still, the bite being at the same time perfectly natural. This is not the model of an imbecile, but of a lady who is exceedingly clever, and what might perhaps appear somewhat strange, a magnificent singer. Here, again, we have a hereditary history. Besides these, there is at present in the hospital a specimen of the typical V-shaped and contracted arch, with in this case also, a family history, but which, under the care of Mr. Williams, is progressing very favorably. Numerous other examples might be given, but those already mentioned will serve to illustrate the existence of that strong hereditary tendency to the transmission of peculiarities, which suffices also to cause irregularities in the organs of mastication. Whilst admitting the theory of such transmission being but another illustration of the law of reproduction of species, a law unfortunately so true

as to be extended to the progressive repetition of deformities, it becomes a serious reflection when we consider that departures from a normal type, transmitted to succeeding generations, may eventually become the fixed type of the family or race.

There is yet one other form of irregularity to which I would draw attention this evening, and it is one which may be either congenital or acquired. I refer to an excessive prominence of the upper incisors, the maxillæ having their palatal processes raised into a higher and more pointed arch, and the alveolar processes of each side becoming consequently approximated. There seems to be but little doubt that the acquired origin is due to a habit of thumb-sucking or to one of a similar character, but the cause or causes productive of the congenital V-shaped and contracted arches of the present day are still merged in obscurity. There has been advanced a theory attributing this deformity to a peculiarity in the development of the maxillæ at a very early period in life, and to mechanical causes operating upon the permanent teeth at the time of their eruption, their causes having their origin in the individual.

There has been brought forward the theory supposing a tardy eruption of the molar teeth to give rise to such a condition by leaving the incisors to act for a time upon each other as they do under other conditions, including a loss of the back teeth. There has been advanced the theory imagining such a condition to be due to a process of selective breeding, and lastly, there is an assumption that tardy and insufficient development is the outcome of the advance of civilisation and an alteration in the requirements of modern life, modifying materially the physique of the present generation. This modifying power is indicative of less physical vitality, more nervous energy, less power of endurance, but more mental activity; or, in other words, a power causing an excessive development of nervous at the expense of physical force, such a power being productive of, and correlated to, a lesion of the trigeminal nerve, consequent upon which we have a retarded growth of the maxillæ, and abnormality of position in the teeth.

The theory of selective breeding, which was advanced by Mr. Cartwright in 1864, certainly seems at first sight to be a very tangible one. In the first place there is undeniable proof that irregularities are more common in the most highly civilised communities. In such communities, the physical form most admired is represented by well-shaped lips, a small oral orifice, high and capacious forehead, well pronounced chin, ears small, neck long, ankles, wrists, feet and hands

small, with an expression in which the intellectual predominates over the animal. Such a type may be fairly taken to be the rule rather than the exception in our own country, which, owing to the blessings of prosperity, has year by year, advanced in those conditions which tend to make the intelligential faculties the most valuable to mankind, thus enabling the class possessing them to live the most easily. As a consequence, the offspring of such a class naturally become the most numerous, the representatives of the opposite type gradually disappearing.

Again, with an increase of delicacy of perception, there developes simultaneously an augmented desire after refinement of form, the consequence being that those possessing the intellectual type of features are more likely to marry. Yet the dire result is, that under such conditions, and in such communities, we find the greatest amount of irregularity, and the contracted type of jaw becoming more common. A diametrically opposite state of things being the case in nations of a savage or aboriginal type, or even in individuals of a low social standard in *civilised* countries, the inference may be very fairly drawn that small jaws may be characteristic of breed in certain conditions of life, or may express symptoms of deteriorated growth. And whether it be high breeding, or that form in which, as in the case of small islands, matrimonial relations are distinguished by greater consanguinity, diminished capacity of the jaws is generally a prominent feature, and irregularity of the teeth a distinctive phase. Again, comparing the characteristics of high breeding between man and animals, we get similar results, as shown in the small head, thin legs, small feet, and narrowness of the maxillæ. Still further, we get astounding differences in individuals of the same race but of different social grades. For instance, taking as our two types a fair representative of the aristocracy as one, and a characteristic farm labourer as the other, we get in the first instance an arch, elliptic, slightly flattened in front, narrow from side to side, the upper incisors biting well outside the lower; the teeth, if regular, deficient in number; or if normal as to number, more or less irregular, whilst in the second type we find round, boldly developed maxillary arches, regular teeth, with slightly overlapping incisors. Such information would at first lead one to the conviction that the hypothesis as to the influence of selective breeding is a true one, but opposed to such a theory is the obvious fact that for a process of high breeding to end in the production of deformity, would be the defeat of its prime object, which is the elimination of anything tending to unsightly degeneration from normal types.

We are led, therefore, to the rejection of the theory of selective breeding in its literal sense. At the same time, that there is in many cases hereditary mischief there can be no doubt. For instance, as far as the jaws and teeth are concerned, there may be perfect regularity in both parents of the same family. In one, the jaws and teeth are large, in the other both are small, each being in its way a normal type. Still, if the small jaw of one parent and the large teeth of the other appear in the offspring, deformity is sure to follow. This, however, is principally the case in the intermarrying of individuals of different race or social position, such a deformity being in this instance rather the result of the mixture of two essentially diverse types, the outcome of which could not under ordinary circumstances be expected to be satisfactory. In fact it is open to grave doubt as to whether the theory of selective breeding has ever been, or could be, successfully applied to humanity. To advance such an argument and apply it satisfactorily as to the production of the same results, comparatively in man and animals certainly seems to me to be out of the question. I refer to Mr. Cartwright's comparisons between the small feet, heads, maxillæ, &c., in horses and in man as a result of selective breeding. Take, for instance, the breeding of race-horses, which is perhaps as good an example of high breeding as can be found. In such cases, the perfection which is obtained is the result of the most stringent and careful regulation in the selection of blood and species. True, the outcome is probably a nearer approach to perfection and symmetry in the offspring, but such a result is ever accompanied by an ample development of every physical organ, and though there may be a tendency to a slightly modified condition of the maxillæ, corresponding to the refinement of form in the whole animal, there is no evidence to prove that there is anything approaching to or suggestive of abnormality. Indeed, such a result would, as I have remarked before, be antagonistic to the most vital principle of such breeding. On the other hand man, being a free creature with the powers of thought and perception, influenced and governed as he is by so many and diverse considerations, whether moral, social, or political, influenced also by circumstances over which he has no control, the same conditions of high or selective breeding do not apply, and cannot be applicable to him in the reproduction of his own species and the continuation of his race. As a consequence, we get an indiscriminate mixture of types, races, and individuals, coincident with a large increase of abnormalities of form and position in the dental organs, showing that be the

breeding selective or otherwise, such abnormal conditions still exist and increase.

Availing myself of this assumption I venture, then, to argue that with regard to the question of reproduction of species, the cause of contracted and crowded maxillæ may be traced not so much to a system of selection as to an unsuitable mixing of different types and races, producing exaggerated modifications of form and character. Passing on, we come now to the consideration of the effects of civilisation productive of and correlative to a lesion of the trigeminal nerve. I have already mentioned such conditions as indicating an undue development of nervous energy, to the detriment and insufficient nourishment of the physique, such conditions operating in an injurious manner also upon the development of the permanent organs of mastication. That some very gradual but perceptible change in the system does take place, and is associated with the advancement of civilisation and an alteration in the necessities of life, there seems to be but little doubt. For instance, anatomically and physiologically there is a difference. The framework of the body is not so large, the countenance is paler, the features are more pointed, and not so expressive of health as of intellectual refinement. The brain is becoming developed more relatively, and too frequently at the expense of the body, and as a consequence we have an increase of cerebral diseases, and more deaths from apoplexy and paralysis.

The reason perhaps is that with an increased necessity for mental excellence there is developed coincidently more nervous tissue, the work necessary to such development stimulating unduly the nervous system, thus affecting prejudicially the development of physical strength and endurance, this tendency being increased by inheritance through successive generations. That this is more noticeable in large cities and in civilised countries, being almost, if not entirely, absent amongst savage communities, indicates in a marked manner the relationship between this condition and the advance of civilisation. For what does the advance of civilisation imply? It means a progressive development from a more or less crude state to a condition of high moral and intellectual status. Such progress in a nation is but the result of the most patient thought, refined perception, and continued brain work on the part of the individual, producing either by example or otherwise a similar desire for excellence in those around him, which is again taken up by others, until it spreads and becomes a normal characteristic of society.

And what is the age in which we live? It is one of the fiercest competitions, engendering high pressure on mind and memory. It is an age in which success in professional, public, and commercial life demands more strenuous and exhausting toil, sterner concentration of brain function, and a more harsh and rigid sacrifice of the amenities which time offers than was formerly the case. This brain and nerve strain goes on, continuous, augmenting, and intensifying, and in also too many cases there is a break down at an early age, with mind and body shattered, and reduced to premature inaction or senility. In fact, the great and absorbing competition of our time, may truly be termed a struggle for life as hard, and involving results and transformations as unerring and inevitable, as were ever traced in the origin of species wherein the weak are the prey of, and have to succumb to, the strong. Such is the age in which we live, one in which in many cases success seems hardly worth the price paid for it, and an age of the highest civilisation and culture. And now let us apply this condition to the theory we have in view. Parents through the exacting demands upon the brain, necessary for success in life, and under a severe mental strain, transmit an undue nervous development to their offspring.

In the children this condition is augmented by the still increasing necessity for mental excellence. Consequent upon which they suffer from immature physical development, destroying the balance of harmony of function, reflecting seriously upon the whole physique, and producing at the same time a lesion of the trigeminal nerve. This nerve supporting and governing the tissues to which its branches are distributed, we may readily conceive that such a lesion might be productive of an undue relation between teeth and maxillæ, and so lead to crowding and irregularity, the development of the teeth and alveolar processes being two entirely independent operations. That such a lesion could only operate on the permanent teeth is easily seen, when we remember that to produce any marked effect on the deciduous set, we should have to go back to intra-uterine life for the period of its influence. This assumption certainly seems to be a very fair one, but illustrative of the retarded development which almost inevitably accrues from a disturbance of nerve function. For instance, Tiedmann relates three cases of absence of the olfactory nerves, coincident with an imperfect state of the cribriform plate of the ethmoid bone and cleft palate. The question as to what class of nerves this influence on the face is exerted by, is open to argument, but possibly it may be referred to the

loss of influence exercised through the sensitive or sympathetic nerves.

This, then, is the theory. That during their eruption the permanent teeth are under the influence of a peculiar nervous force, pushing on their development regardless of a more tardy growth of the osseous system. Having no time to recover from this, they emerge in the same disordered arrangements in which the crowns were formed, this nervous condition being caused in the first place by requirements of civilisation correlative with a too great stimulative of the brain. If hereditary, we may suppose such a condition to have been present in the antecedents.

To conclude, then, we have this argument. The cause of irregularity of the teeth other than accidental, lies in the insufficient development of the maxillæ as compared with the size of the teeth, this being sometimes due to a retarded growth of the jaw coincident with an ample development of the teeth, or, on the other hand, an inheritance of large teeth out of all proportion to the size of the maxillæ.

Mr. President and gentlemen, it only remains for me to thank you most sincerely for the kind indulgence with which you have listened to a somewhat lengthy paper, to acknowledge the consciousness of its many shortcomings, and to hope that we may derive both pleasure and profit from the discussion of a subject of such paramount interest and importance.

NECROSIS.

By EDWARD LATCHMORE.

(Concluded from page 72.)

NECROSIS of the jaws may be placed under three principal heads, viz.

1. *Traumatic*, from fracture or contusion of the jaw, such as that caused by gunshot wounds, the unskilful performance of the operation of extraction, &c.

2. *Specific*, from the effects of phosphorus or mercury, and from syphilitic poison.

3. *Dyscrasic*, which accompanies scorbutus and cachexias generally, notably that following the exanthemata.

Necrosis to the extent of small portions of the alveolus not unfrequently follow fracture of the jaw, and without any per-

manent deformity occurring, but when the necrosis affects the whole thickness of the bone, as may happen when the fracture is comminuted and a portion becomes so detached as to lose its vitality, the consequent deformity may be very great. The necrosis following gunshot wounds of the face seldom amounts to more than small exfoliations, the bone tissues being well supplied with blood, and are softer than the long bones of the extremities.

Phosphor necrosis is a form of the disease almost peculiar to those engaged in the manufacture of matches. Still, it has been known to occur in others. Simon narrates a case in which the disease appears to have been brought on by a person chewing pieces of ginger, which he kept in his pocket with some lucifer matches. And Sir James Paget describes an instance in which a patient had necrosis of the palatine and alveolar portions of the upper jaw through having been exposed to phosphorus vapour in preparing medicine for himself containing that drug.

Salter considers the influence of the phosphorus fumes to be entirely local. While Lorinser, who is said to have discovered the disease, considered that the blood is first surcharged with phosphorus, which has an affinity for the osseous tissues, and that the immediate action of the poison is localised in the jaws by their direct exposure to its application.

This form of necrosis is only found in those in whom dental caries is present, which by exposing the pulp offers a direct channel for the poison to be communicated to the subjacent periosteum.

The symptoms of phosphor necrosis differ very slightly from those of other forms of necrosis in the same parts; they are, however, not unfrequently accompanied by bronchial and pulmonary irritation from inhalation of the fumes.

Syphilitic poison frequently produces necrosis of the jaws. Stanley says, "Syphilis produces its effects mostly upon the compact osseous textures, and in portions of bones which have thin, soft coverings, as the flat cranial bones." This condition we see especially in the palatine plate of the superior maxilla. The lower jaw is also occasionally affected in this way by syphilis.

Exanthematous necrosis is the form of this disease which attacks the jaws of children, and depends upon the poisonous effects of some of the exanthematous diseases, especially scarlet fever. It occurs most frequently about the age of five or six years, when each jaws contains the whole of the first set, and the germs more or less advanced of the second set of teeth; but Mr. Bryant has recorded a case of exfolia-

tion of the intermaxillary bones after measles in a child of three, and Mr. Heath cites a case of a boy æt. 10 who had extensive necrosis of both jaws after fever. The disease first shows itself a few weeks after the occurrence of the feverish attack, in tenderness of the mouth and fœtor of the breath, and the gum is seen to be separated from the teeth and alveolus. The symmetrical character of the disease is remarkable, appearing almost simultaneously on both sides of the jaw and rapidly denuding the bone, thus leading to necrosis and subsequent exfoliation of considerable portions of it.

In the case of young subjects extensive necrosis of the jaw will ordinarily destroy the germs of the permanent teeth as well as the temporary teeth already cut, since, with children, inflammatory affections generally run a more rapid course than with older people, particularly in an organ in which development takes place within small limits with comparative rapidity. Mr. Tomes has pointed out that in these cases the sequestrum does not involve the pulps of the permanent teeth, although encroaching upon them, and they therefore remain *in situ* whilst the new bone forms around them, and the teeth when fully developed make their appearance in the ordinary way. And he says that it is desirable in those cases where necrosis of the jaw occurs during the presence of the temporary teeth that the sequestrum should be allowed to remain until it is perfectly detached both from the contiguous bone and soft parts before its withdrawal is attempted, and that its removal should be effected with the least possible injury to the latter, so that the permanent teeth, if not destroyed by the disease, may be placed under the most favorable circumstances for their future growth and evolution.

Mr. Stanley, in his work on 'Diseases of the Bones,' alludes to cases of necrosis of the lower jaw occurring in children without any obvious cause; he does not appear even to connect them with a strumous diathesis. He says, "a large portion of the lower jaw in young persons occasionally perishes without any previous derangement of health, local injury, or other apparent cause. But in some cases an aching in the bone has preceded the death of it. Such examples of necrosis usually occur in early life, between the fourth and twentieth years, but rarely later." In these cases the treatment in the early stage should be local depletion by leeches, a free incision through the affected periosteum to give exit to effusion, followed by poppy fomentations and the exhibition of salines and purgatives.

Another form of necrosis has been described by Dr. H.

Senftleben in the 'Archiv für pathologische Anatomie,' xviii, 347, caused by what he calls "acute rheumatic periostitis." He says that it attacks perfectly healthy and robust individuals with good teeth, after severe cold, commencing with violent toothache along one side of the lower jaw, considerable and often very intense fever, swelling of the cheek and gums, difficulty in chewing &c., these symptoms being at times followed by necrosis of a portion of the maxilla.

Necrosis of a considerable portion of the alveolus is sometimes caused by the unskilful use of arsenious acid to extirpate a tooth pulp; part of it having been allowed to escape from the tooth to the neighbouring gum and there remain, the gum gradually sloughs away from the tooth and the alveolus becomes necrosed. The treatment in such a case should be the thorough irrigation of the diseased part with carbolic lotion, and all necrosed bone should be scraped away. Retarded eruption of the wisdom teeth, when there is decay going on in a neighbouring tooth or teeth, thereby causing surrounding portions of the jaw to be infiltrated with sanious matter, has been known to cause necrosis and osteophytic formation.

Necrosis in the upper jaw is much less frequent than in the lower. The greater immunity enjoyed by the upper as compared with the lower jaw is due, no doubt, partly to its less exposed position, but more especially to the fact that necrosis occurs less frequently in cancellous than in compact bone. The great difference in the supply of blood to the two bones must also have an influence, the upper jaw being supplied by very numerous branches of the internal maxillary arteries, which inosculate freely from side to side, whilst the lower jaw is supplied by two small branches only, which do not anastomose.

The *symptoms* of necrosis of the jaws are:—Pain referred to the teeth, intermittent at first, but at length becoming continuous, followed by loosening of the teeth and purulent exudation from their sockets. The gums become swollen and tender, and are detached to a greater or less degree from the alveoli, with a continual purulent discharge. In all cases of necrosis the face is swollen, but more particularly so in phosphor necrosis. Purulent infiltration now takes place, fistulæ being formed at the most easily-reached surface. Through these fistulæ the dead bone may be readily felt by a probe. As to the remaining symptoms of the disease, I cannot, I think, do better than quote Mr. Heath on the subject:

"The patient's general health has by this time become seriously affected, owing both to the actual suffering he has

undergone and to the interference with his nutrition, which the state of his mouth necessarily involves, it being impossible for him to take any but fluid or semi-fluid food, and that in small quantities. The constant presence of most offensive discharges in the mouth and mixing with the food must have an injurious effect upon the patient. The necrosed portions of bone project more or less into the mouth, and give the patient great inconvenience, and in very severe cases of phosphorus necrosis gangrene of the cheeks and lips ensues with a rapidly fatal termination. In less severe cases the patient may drag on a wretched existence for months, and sink at last from exhaustion, or may occasionally recover with considerable loss of bone and deformity."

With regard to the *treatment* of necrosis it will be rather the early stages of the disease than the more advanced that will call for the consideration of the Dental Surgeon, hence his treatment will be rather prophylactic than remedial. Any local cause of irritation, such as diseased teeth or stumps, must be removed immediately; or, if the patient is suffering from the effects of the fumes of phosphorus, he should be removed from their influence immediately.

Local depletion by leeches, both externally and internally, and by scarification of the gums, will relieve the congestion, and the application of emollient poultices externally, and of poppy fomentations in the mouth, will relieve the pain. Free vertical incisions should be made through the gum wherever tenderness and swelling exist, carrying them clear down to the bone. If necrosis is found to be inevitable, and the discharge has established itself, astringent and deodorising lotions must be used, such as solution of chloride of lime or permanganate of potash. The *sequestra* must take their own time to shed, sharp projections, however, may be cut off by nippers. Earlier interference might disturb the relations of the supplemental bone and the portions of jaw still living.

Fearing that I have already trespassed too long upon your time and patience, it only remains, for me in conclusion, gentlemen, to tender you my best thanks for having listened to a paper of whose demerits I am only too conscious.

NITROUS OXIDE, AS A GAS, A LIQUID, AND A SOLID, AND HOW OBTAINED.

By J. H. PARKINSON, L.D.S. Glas.

OF all the anæsthetics which have been proposed for use there is, perhaps, no one so simple and so safe as nitrous

oxide, at all events, for minor operations, such as the majority of those in Dental Surgery. Although one of the first anæsthetics discovered, as long ago as the year 1800, and of recent years used many thousand times a year, an accident caused by its *direct anæsthetic* property, I believe, has never been known to result from its administration; very unlike those more popular but more powerful drugs ether and chloroform. So entirely harmless it is when pure that its administration to the extent of producing temporary intoxication, accompanied by that remarkable exhilaration, when slightly diluted with air, which has earned it its name of laughing gas has long been a common experiment in ordinary chemistry classes. Unfortunately, for various reasons many practitioners employ the more dangerous anæsthetics even for the minor operations to which nitrous oxide is so well suited whilst very frequently deterred by the undoubted small amount of danger attending the use of chloroform. *Small though it is* (it being estimated that only one case in 16,216 has proved fatal even in the case of chloroform) quite a number of surgeons prefer in minor operations to allow their patients to suffer a certain amount of pain. A pain which would be absolutely unnecessary did they only familiarise themselves with the use of this simple anæsthetic. The causes of this preference for the more powerful agents are not perhaps very far to seek. The surgeon, in the first place, is very thoroughly taught during his student years the use, the precautions necessary for the administration of, and, we may add, the dangers attending ether and chloroform, whereas not being experienced in the administration of nitrous oxide he is less inclined to adopt it even in cases where it is specially and obviously advisable, and, in the second place, until comparatively recently the drug was not to be procured in a perfectly pure and easily administerable state like ether and chloroform, but required a formidable amount of apparatus to prepare, and a still more formidable amount of watchfulness and labour if it were to be prepared pure and fit for use, besides an amount of practical chemistry which is perhaps rather out of the line of the ordinary busy surgeon, and still more of the Dental Surgeon. The gas is now, however, to be obtained as a regular article of commerce, compressed into a liquid form in portable and very convenient iron bottles, which hold within a space of 12 inches long by $3\frac{1}{2}$ inches diameter 100 gallons; of course there are various sizes of bottles to hold from 50 to 300, 500, and a 1000 gallons; about five gallons being usually sufficient for one administration. Besides the great convenience of their being able to purchase a supply

of nitrous oxide as readily and with as much guarantee for its purity as in purchasing a quantity of chloroform and even more so (because there is no possibility of nitrous oxide changing in composition *when kept in iron bottles* with any external influence, such as light and moderate heat, whereas chloroform under the influence of light decomposes forming hydrochloric acid and liberating free chlorine), there is much more safety in using the gas so prepared, inasmuch as it is possible to employ in its manufacture, on a large scale, a number of precautions which are very cumbrous and very inconvenient in making it in small quantities, but, further, there is much greater certainty of its purity than when made on the small scale, as the mere fact of the presence of a notable amount of impurity would *entirely prevent* its being condensed in anything like the proper quantity into the bottle. This may be seen from the fact that whereas nitrous oxide condenses under a pressure of 30 atmospheres; nitrogen would require about 300 atmospheres, and nitric oxide about 270. These being the two most frequently found contaminating gases. A purchaser, therefore, has only to weigh his bottle when he receives it, and again after it is empty, to be satisfied that he has the proper quantity of liquid in the bottle, and therefore that it must be *extremely pure* and free from nitrogen, &c. Conditions difficult when made on a small scale, and with ordinary apparatus, and especially when trusted, as it sometimes is, to an unskilled Dentist's apprentice as a sort of extra duty. A surgeon or Dentist, in fact, who made or prepared his own nitrous oxide would be as shortsighted and as likely to obtain unsatisfactory results, unless he were a practical chemist, as would be the ordinary practitioner who under similar conditions, instead of purchasing his chloroform from the skilled manufacturer, prepared it himself on a small scale. He would be likely to obtain a far inferior quality, he would certainly involve himself in infinitely more trouble, and probably in the long run in considerably more expense.

Although so much has been said and written on this subject, yet still, considering the great value of this agent a short history of it, and account of its mode of preparation, and the precautions necessary to be adopted may perhaps be found interesting.

Nitrous oxide was discovered by Priestly in 1776, but its anæsthetic properties were not known until discovered by Sir Humphrey Davy, who in 1800 published 'Researches on Nitrous Oxide, and the combination of Oxygen and Azote, and on the respiration of Nitrous Oxide and the

Gases.' "He found that the nitrous oxide released him from headache after a profound fit of intoxication," brought on by drinking a bottle of wine in eight minutes in order to compare its effects with those of the intoxicating gas. He also found it lessened the pain of cutting a wisdom tooth; and in his summary of the results of his researches concerning the gas he says, that "as nitrous oxide in its extensive operation seems capable of destroying physical pain it may probably be used with advantage in surgical operations in which no great effusion of blood takes place."

(*To be continued.*)

CONTINUOUS GUM FACINGS, FOR USE WITH VULCANITE, CELLULOID, OR OTHER BASES.

By A. B. VERRIER, L.D.S.I., Weymouth.

HAVING, after numerous and lengthened experiments and very many disheartening failures, succeeded in reducing my gas furnace for manufacturing continuous gum work to the minimum of size (about six inches cube) and the maximum of convenience, efficiency, manipulative handiness, and control, by means of which with scarcely any trouble, without loss of time, and with an absolute absence of all the heat, dirt, dust and disappointments with which all who have ever tried the old-fashioned coke furnaces are only too familiar; at a moment's notice the gas is lighted, and in ten minutes all is ready for firing the work. The difference cannot perhaps be better realised by those who have never tried this troublesome but beautiful and natural style of artificial work than by thinking of the old cumbrous plan of preparing a large coke furnace to cast even a little zinc model and comparing it with the present handy plan of the simple little gas furnaces made by Mr. Fletcher and others. The comparison is far from a true one, because with the zinc, heat is simply required to melt it, whilst with the continuous gum work cleanliness and *absolute control* of temperature are the chief essentials for success. The heat in the several firings must be gradually raised and gradually reduced, and any one may conceive for themselves the difference, in point of time, necessitated in the raising and lowering of the temperature between the vitrifying of the mineral body and the easy handling of the work, with a mass of coke firing in a huge furnace or the little gas furnace I have found to work so perfectly.

The facility and certainty with which the work may now be performed, has led me to experiment as to the practicability of preparing CONTINUOUS GUM FACINGS, for either whole or partial cases, to be afterwards mounted on vulcanite, celluloid, or other base plates, and my success has more than realised my most sanguine expectations.

I presume all will admit, that for beauty, that is, imperceptibility of artificiality, no known material approaches the continuous gum work, and no process certainly gives the maker greater latitude for the display of his individual artistic taste, conception and dexterity of manipulation. The difficulties of the practical application of continuous gum work (as a whole) hitherto have, and probably ever will, prevent its use except under special circumstances, principally entire cases or sets; but this method of only mounting a continuous gum facing is easily open to general use with single teeth, interspersed teeth, irregular sections or fronts carried back so far only as vision reaches, and in every case having the advantage of the more easily and accurately fitting rubber base, that may be cut or eased as the requirements of the case demand without injury to the delicate gum facing.

Up to the present time the only option has been the use of the "gum teeth" or sections—brought to a marvellous state of perfection it is true, both by American and English makers—but still wanting in adaptability to the ever changing requirements. The most æsthetic artificer loses his individuality in having to set these teeth so that the gum line was not unduly interfered with, thus generally marring his best efforts to avoid formality. Again, the difficulty of preventing the rubber showing between the crevices of the gum blocks, and even where this was accomplished the prejudicial effect of the refraction of light by the want of union of these joints made this class of work, although better in appearance than the simple plain teeth, still far from satisfactory to the practitioner who hankered after perfection, or the wearer who might dream of having artificial substitutes that "defy detection."

All these and every other reasonable advantage I trust and firmly believe may be obtained by the further development of the process I am now introducing, and I feel sure that as the extreme simplicity of the process becomes known and appreciated, no practitioner will be reluctant to give his patients the benefit of such advantages on account of the trifling extra work entailed.

In the near future I trust I may be permitted to give the details of my process in the valuable and wide spread pages of this journal.

British Journal of Dental Science.

LONDON, FEBRUARY 1, 1883.

ON another page we publish Mr. C. S. Tomes's contribution to the late Annual General Meeting of the British Dental Association, and a careful perusal is solicited as it contains much which cannot fail to attract attention. The origin and treatment of alveolar abscess has occupied many pages in the text-books on Dental Surgery, and we cannot say that but a great deal is conclusive. Prompted by the spirit of the age Mr. Tomes has directed his attention to the probable influence microzymes have in creating alveolar abscess, and in a clearness of expression always associated with everything Mr. Tomes has to tell us he puts forward problems which he invites every member of the profession to work out. With a desire to elevate the scientific position of our calling the solution of such questions as these by direct experiment cannot but have a beneficial result. Our pluggers and forceps are very useful, but the great work of the Dentist of the present day must be in the investigation of those morbid changes which lead to application of these instruments. We cannot but admire the contour filling and extirpated dead nerve, but the higher work is invested in prophylaxis. We must endeavour by every effort to grapple with those conditions which produce dental caries, alveolar abscess, and the failure of fillings. Imperfect manipulation of the latter should never be held as the only cause, for it is clearly demonstrated that other factors are at work, and these must be defined by carefully prepared notes and by experiment. To confine our remarks to Mr. Tomes's paper we first ask our readers to make themselves thoroughly acquainted with his meaning, and then to follow out strictly those practical suggestions which he makes. If some five hundred cases could be collected, with notes of every detail,

from the profession and handed to Mr. Tomes a great work would be accomplished. Without much difficulty the following course could be adopted, and we feel we are not saying too much when at the end of two years from the present time Mr. Tomes might be in the possession of a number of note-books from which he could furnish the profession with statistics which would show the course of treatment to be followed for the prevention of alveolar abscess. To begin with, let none but single-rooted teeth be taken, for it is almost an impossibility to adopt strict antiseptic measures on upper or lower molars worthy of report in an investigation of this kind. Next let the age, occupation, and the sex of the patient be noted, followed by the agent used for destroying the pulp; whether the coffer dam was used at the time it was extirpated; what drug was swamping the nerve prior and during the time the nerve barb was introduced; whether the pulp came out entire—so far as could be ascertained; whether there was sensitiveness at the apex of the fang upon the second introduction of the barb; whether blood followed, and, lastly, whether up to the time the cavity was sealed it was within the range of possibility for air or any fragment of the dead nerve which has been in contact with the air to have found its way to the apex of the root in a septic condition. In penning these remarks we appeal to the profession to add anything that may assist Mr. Tomes in arriving at a conclusion, for it is the common experience in practice that barely a score of cases such as we require are treated by individual practitioners during the year, but with the combined efforts of all, a number would be reached invaluable in the extreme for reference.

THE horrible discovery of the young girl's body in St. Luke's has led to various suggestions as to the means by which it could be identified, and amongst others is the recognition of the teeth, which have apparently received Dental treatment. We trust, should any photographs be circulated of the casts taken, that every member of the profession will exert his influence in trying to find duplicates

which will correspond. It is an unfortunate fact that most regulation models are destroyed, and more particularly those which are taken at our Dental hospitals. The teeth which, as a rule, withstand the murderer's knife are valuable as a means of recognition, and we hope in this sad case they may be the means of bringing the perpetrators of the crime to justice.

Manipulative Miscellany.

All instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month, they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits, and without any intention or wish to pit one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

FERDINAND BEULEKE'S DENTAL RUBBERS.

SAMPLES of seven different rubbers have been sent to us from Hamburg for inspection, and we have no hesitation in saying that many will bear favorable comparison with those of English make. Time has not given us the opportunity to subject them to those tests which we applied about eight months ago when dealing with dental rubbers, but the hard specimens before us have borne severe handling and show considerable elasticity, the black being particularly so. Of those colours which strike us most are the black and the three shades of brown, for in these we find all the qualities of good dental rubber. The packing may be accomplished cold as they are very soft and are rolled in thin sheets.

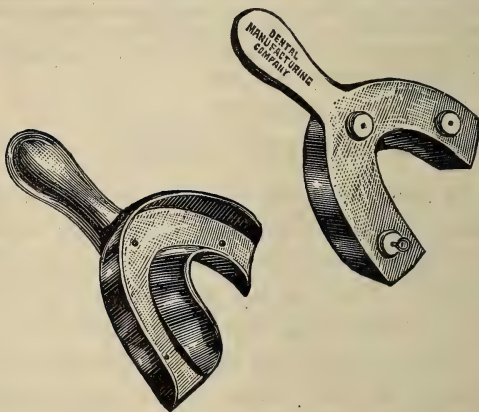
A SIMPLE DIAL TO REGISTER TIME.

To avoid any mistake as to the time when the vulcanizer should be turned out Herr Beuleke, of Hamburg, has intro-

duced a dial upon which the time can be registered. The dial is made of black vulcanite with steel hands, which can be moved with the fingers to any point. Above and below are two tables, the upper showing the time required to harden the various rubbers, and the lower a comparative table giving the different degrees of Celsius, Fahrenheit, and Atm. Druck. The back may also be useful for making notes in lead pencil.

A NEW IMPRESSION TRAY.

To prevent the impression being "sucked" in being withdrawn from the mouth the Dental Manufacturing Company have introduced a tray which will admit air at the time the composition is being removed. It consists of an ordinary tray with three holes, and into these stout wires are



placed. The Godiva composition being put into the cup with the wires throughout its entire thickness the impression is taken, and in so doing the wires are gradually pushed down, so that on their being removed a small hole is left which enables the air to enter, and the suction which occasionally spoils the model is overcome.

A QUICK COMPOSITION HEATER.

At an exceedingly small cost a means is provided by which the composition for mouth impressions may be heated.

The difficulty often experienced in obtaining hot water when visiting patients is overcome with Mr. Braun's apparatus. It consists of an oval pan with cover and false bottom, and when a piece of composition is put in with a little water it may be heated over any ordinary gas burner. There is no fear of it being burnt as it is supported on the false bottom. As an accessory to the travelling bag it will be found most useful.

Reports of Societies.

STUDENTS' SOCIETY OF THE DENTAL HOSPITAL OF LONDON.

ANNUAL GENERAL MEETING, JANUARY 15TH, 1883.

ARTHUR S. UNDERWOOD, Esq., M.R.C.S., L.D.S., President,
in the Chair.

THE minutes of the previous meeting were read and confirmed.

Mr. Crank was balloted for and elected a member.

Mr. Marcus Davis, L.D.S., presented to the museum (for Mr. U. C. Harris, M.R.C.S., L.D.S.) an abnormal upper molar which entered into the floor of the antrum; Mr. M. Davis also gave a curious model.

Mr. McStay presented to the museum a "sawfish."

Mr. PEDLEY related a case of fracture of the lower maxilla. The line of fracture ran immediately in front of the left wisdom tooth, which was only partially erupted. The other lower molars were gone. The chief difficulty of the case consisted in the fact that from overlapping of the fragments the arch was contracted and a lower bicuspid impinged on the side of the upper molar, causing displacement of the fragments every time the mouth was closed. Mr. Moon, under whose treatment the case came at Guy's Hospital, decided to attempt extension by means of a vulcanite plate inserted between the wisdom tooth and the bicuspid of the same side. A model was taken, and served as some guide by which a small shellac plate fitted with gold clasps was made. The fragments of the fractured jaw

were extended and the plate inserted. So good a result was obtained from the shellac plate that Mr. Moon determined not to remove it, but to allow it to do duty for a vulcanite substitute. After an elapse of ten days, examination of the patient's mouth showed the articulation to be excellent, and the case is progressing most favorably.

The PRESIDENT then called upon the Treasurer (Mr. W. Hern) for his report, which showed a balance of £15 11s. The accounts were audited by Messrs. Marcus Davis, L.D.S., and J. McReid Ackland, and were found correct.

Mr. F. NEWLAND PEDLEY, M.R.C.S., L.D.S., then read the Twentieth Annual Report of the Council, in which he referred to the continued prosperity and the excellent scientific position that the Society maintains, and the average attendance was thirty during the past year, which was slightly in excess to that of any preceding year.

It was unanimously resolved that a vote of thanks be forwarded to the Editor of the 'British Journal of Dental Science' for his continued kindness in publishing and presenting to the Society copies of their 'Transactions,' also the copies of his valuable Journal. Also to the Editors of the 'British Dental Association Journal' and the 'Dental Record.'

Mr. F. NEWLAND PEDLEY then read the Council's proposal of officers for 1883-4, who were elected by ballot:

President.—W. Storer Bennett, F.R.C.S., L.D.S., &c.

Vice-Presidents.—W. Hern, M.R.C.S., L.D.S., C. D. Davis, M.R.C.S., L.D.S.

Treasurer.—J. O. Butcher.

Secretaries.—F. Newland Pedley, M.R.C.S., L.D.S., Walter Harrison, L.D.S.

Council (2nd year).—H. Pillin. (1st year).—Messrs. Stainer, Acklaw, Crocker, Parkinson.

The PRESIDENT then called on Mr. H. Burton for his paper on "The Etiology of Dental Irregularities."*

In the discussion which followed the following gentlemen took part:—The President, Messrs. Marcus Davis, L.D.S., W. Hern, M.R.C.S., L.D.S., and C. D. Davis, M.R.C.S., L.D.S.

A vote of thanks was accorded to Mr. Burton for his valuable paper.

The retiring President then delivered an excellent address.

Mr. W. HERON proposed, and Mr. M. DAVIS seconded, that a vote of thanks be given to Mr. Arthur S. Underwood for his kindness and valuable help he had given to the Society during his term of office, which was carried unanimously.

Literary Notices and Selections.

DEATH UNDER CHLOROFORM.

AN inquest has been held at the Holborn Town Hall by Dr. Danford Thomas on the body of Emily Moon, five years old, daughter of Inspector Moon, of the S Division. The deceased, it appeared, was admitted to the Hospital for Children, Great Ormond Street, on the 25th of October last, suffering from disease of the knee. The father last saw her alive on the 10th inst., and was informed of her death on Saturday last. He understood she had been placed under the influence of chloroform prior to undergoing an operation. Mr. Howard Marsh, one of the senior surgeons of the hospital, on visiting the institution last Saturday, found the deceased suffering from a small abscess near her knee, which threatened to attack the knee-joint, the result of which might have been permanent stiffness of the knee. It was advisable to let out the pus by an operation; and in order to save the child from the terror and pain of the operation, it was deemed necessary to administer chloroform. Dr. H. Smith, the house-surgeon, said he only administered a little of this anæsthetic to diminish sensibility. He had twice before administered chloroform to the child. Having performed the operation, which only occupied a second or two, the child's heart suddenly ceased to beat. Every possible means were adopted in vain to restore respiration. Mr. Pepper, of St. Mary's Hospital, who made a post-mortem examination of the body, discovered that the cause of death was syncope, due immediately to the depressing effect of chloroform. It was requisite to open the abscess, and to this end it was advisable that chloroform should be given. The practice at hospitals was to administer anæsthetics prior to the performance of trivial operations, without consulting the friends of the patients; but where life was endangered, they were first communicated with. The coroner said the proportion of persons dying under anæsthetics was one in six thousand; and Mr. Marsh said the present was the only fatal case he knew of during his eighteen years' connection with the hospital. The jury found that the deceased died from sudden failure of the heart's action when under the influence of chloroform and suffering from debility following a diseased knee-joint. They added an expression of opinion that the chloroform

was properly administered, and no blame was attributable to the hospital authorities; but, at the same time, they recommended that, if possible and practicable, parents and friends of patients about to be placed under chloroform should be previously acquainted with the fact.—*Brit. Med. Journ.*

CONTRIBUTION TO THE HISTORY OF PRELIMINARY OPERATIONS.

UNDER the name of preliminary operations, *i.e.* operations usually involving healthy parts and performed for the purpose of rendering possible or facilitating more important ones, Dr. Magitôt includes the resection of the maxilla for the removal of a naso-pharyngeal polypus, the extraction of teeth for the opening of an abscess in the antrum or a cyst of the jaw, and the temporary removal of a tooth to allow the extraction of a neighbouring one.

As examples of the last kind of preliminary operations, Dr. Magitôt gives two cases which occurred in his own practice. In the first (see 'Gazette hebdomadaire,' 1879), the patient, a medical student, had been suffering for fifteen months from great pain and inflammation about the angle of the lower jaw on the left side, caused by the faulty position of the dens sapientia, which grew horizontally outwards with its crown embedded in the substance of the cheek. Finding himself unable to remove the tooth in the ordinary way, Dr. Magitôt removed temporarily the second molar, and was then able to reach the wisdom tooth without any difficulty. The second molar was then replaced.

His second case, was a young lady, *æt.* 25, who had never suffered in any way from her teeth. About a year and a half ago she noticed a hard swelling in the roof of the mouth, which turned out to be the crown of a tooth. It developed very slowly, causing a marked projection outwards of the lateral incisor and the contiguous first premolar. The tooth soon began to decay, and the patient suffered intensely from neuralgic pains.

On examination, Dr. Magitôt found that the right upper canine was wanting, and that the crown of the abnormal tooth corresponded in shape and in size to the canine of the other side. He concluded, therefore, that this must be the missing tooth in a faulty position, but as the decay was very far advanced he determined upon removing it. The appli-

cation of any kind of forceps was, however, utterly impossible, on account of the close neighbourhood of the incisor and bicuspid. Remembering his success in his former case, he removed the healthy bicuspid, which was placed for the time in a hot damp cloth, and effected the extraction of the canine with the greatest ease. The bicuspid was then replaced in its socket without any form of apparatus or ligature, and the patient was directed to apply compresses with chlorate of potash. There was no reaction, and in less than a fortnight the bicuspid was quite firm.—*Gazette des Hôpitaux*, 1882.

IODOFORM AS CAPPING FOR TOOTH PULP.

HAGELBERG was led by the extraordinary results of iodoform in the treatment of wounds to try its use in Dental practice. He treated by this means with the greatest success forty cases of exposed pulps (nineteen molars, thirteen bicuspids, and ten front teeth).

His mode of treatment is as follows:—He first applies a solution, of syrupy consistence, of colophony in carbolic acid to the cavity and thoroughly removes all the decay. He then carefully cauterises the nerve with the same solution, and finds that within a minute or two the pain however intense is quite relieved. The cavity is next well dried and iodoform in powder or in solution in ether applied directly to the cauterised pulp. The tooth is stopped at once with gutta percha or cement.

The after progress of his cases was most satisfactory; in two only there was a slight inflammation, which called for the use of iodine. Since he commenced the iodoform mode of treatment, Hagelberg has not once made use of arsenic, and has come to the conclusion that arsenic must give way in Dental practice to iodoform.—*Berliner Klinische Wochenschrift*, 1882.

DR. GELLÉ ON SOME RESULTS OF DENTAL CARIES ON THE AUDITORY APPARATUS.

AMONG the effects of dental caries and dental neuralgia resulting from it, Dr. Gellé mentions otorrhœa, congestive

or suppurative otitis, deafness and otalgia accompanied with noises in the ear.

The special feature of these accidents is that they are not exclusively confined to the ears, *e.g.* deafness and noises, &c., are met together with photophobia, congestions of the eye, lachrymation, scattered neuralgic points, congestions of certain regions such as the cheeks, mucous membrane of the nose, &c.

Pain in the ear is not a necessary accompaniment of any of these trophic changes; the decayed tooth need not even be painful.

He cites the case of a healthy lady, *æt.* 65, who had suffered for a fortnight from intense right infraorbital neuralgia and great difficulty in breathing through stoppage of the right nostril. There was slight deafness on the same side, but constant disagreeable singing. The meatus was dry and healthy; the membrana tympani opaque, milky, and covered with dry epithelium. Two days after the extraction of a carious lower molar (right), the neuralgia had ceased, the nostril was free and the singing noises had left her. The result is not always so favorable; in one of his patients, a young man, a wisdom tooth caused a sublingual abscess and a suppurative inflammation of the middle ear, which has left him totally deaf on that side.—*Gazette des Hôpitaux*, 1882.

CASE OF CONGENITAL MACROGLOSSIA.

At the meeting of the Société de Chirurgie (of Paris) on the 29th November last, a paper was read on a case of macroglossia congenita, occurring in the practice of Mr. Guerlain, of Boulogne-sur-Mer. The subject of this deformity is a girl now aged six. When first seen the day after her birth she weighed over eight pounds, her tongue formed an enormous mass, protruding from the mouth and hanging down in front of the chin and the anterior part of the neck. The tumour was shaped like a mushroom and measured two inches in length, one inch and a quarter in breadth, and one inch in thickness. The hypertrophy seemed to affect every part of the tongue; the papillæ were large and prominent, and the blood-vessels very dilated and varicose. The child's parents were free from any deformity. No treatment was adopted on account of the child's age. The girl developed regularly, while her tongue decreased in

size, and at last could be kept within her mouth. Dentition occurred without any trouble, and at the proper time. The child could eat and speak without much difficulty, almost as well as other children of the same age. She has lately passed through an acute illness, and apparently from this cause; the tongue has begun to increase again, and now presents ulcerations along its borders. The author of the communication considered surgical intervention necessary, and thought of removing part of the organ by the *écraseur*; the reporter, M. Périer expressed himself in favour of *ignipuncture*.

A DIAGRAM OF AN INCISOR TOOTH.

THE S. S. White Dental Manufacturing Company have published a coloured diagram of a section of a central incisor with the contiguous parts, and we regret that the Dental Society of New York, at whose request it is published, should not have corrected one or two errors which sadly spoil the otherwise excellent drawing. Unless that body ignores Mr. Tomes's demonstrations of certain structures many parts are incorrect. Naysmith's membrane is for instance made to leave off at the termination of the enamel instead of being continuous with the cementum. Again, in the footnote, "the red lines throughout the tooth itself represent the living matter," we are led to believe that the transverse lines which appear across the enamel are those canals which Bödecker has demonstrated to show that a direct circulation is kept up between the dentine and enamel, and in putting it thus we lose altogether the delicate *striæ* which are so characteristic in microscopic sections of enamel; we are therefore at a loss to know whether the transverse lines are *striæ* or Bödeckers canals. The dentinal fibril is regarded by Mr. Tomes to be a prolongation of the odontoblast cell, but the diagram gives it as a process of the dental pulp which proceeds between the odontoblast cells. A feature which is always interesting to the student in the branches of the artery which are given off to the periosteum and show that slight periodontitis is always present with acute inflammation of the dental pulp is altogether absent. In other respects a fair idea of a tooth and its surroundings are given. We find that the circular which accompanies the print, calls attention to the accuracy of those features which we are compelled to condemn as they are contrary to the recognised teaching on this side of the Atlantic.

ASHENHURST FUND.

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Further subscriptions will be received by Messrs. C. Ash and Sons, the Dental Manufacturing Company, Mr. Rutterford, Messrs. W. and J. Jamieson, and the Editor of this Journal.

Mr. J. E. HIBBERT, of Pendleton, has sent us the following method, which may be adopted to restore the fit of gun-metal flasks which have become stretched by pressure in the vice or vulcaniser. He says, when flasks have become badly sprung by the great pressure that is brought to bear upon them by the central screw vulcaniser, they may be made to fit again, perhaps better than when got from the dépôt, by the following process. Take the lid first, and with the hammer straighten it again upon some flat surface, when done, put the flask together, and fix it in a strong vice, screw it up tightly, then hammer it until every part comes close together. Now separate the flask, and hammer the guiders till they fit very tightly and require force to get the flask together; screw up tightly in the vice again and hammer lightly until the flask will separate easily, but without any wriggling movement. If properly hammered there will be no need for filling afterwards, and the guiders, and all other parts of the flask, will fit so closely that nothing further could be desired. I have myself refitted flasks, when the guiders have sprung quite a quarter of an inch upon each side, and the lower rim has almost stood outside the middle part of the flask. To prevent them getting in the same condition again put a thick piece of iron between the flask and the screw of the clamp.

At Leopoldstadt in Austria, a mechanical Dentist, named Gronar, has been sentenced to six week's imprisonment for illegally practising Dental Surgery. When brought before the judge he tried to pass himself off as the assistant of a retired surgeon-major. But the magistrate considered the

latter was only a man of straw and served merely as the former's living signboard; and as at a visit made by the city officials M. Gronar had been found in the full practice of Dental Surgery (zahnärztlicher thätigkeit), a conviction must follow.—*Wiener Medicinische Wochenschrift*, No. 48, 1882.

VACANCY.

DENTAL HOSPITAL OF LONDON, LEICESTER SQUARE.—
Assistant Dental Surgeon. Applications by February 12th.

Correspondence.

[We do not hold ourselves responsible for the opinions expressed by our
Correspondents.]

THE LIMITATION OF DENTAL SURGERY.

To the Editor of the 'British Journal of Dental Science.'

SIR,—Much has been said and written of late on how far a qualified Dental surgeon ought to go? In other words; what are the legitimate duties of one possessing simply the L.D.S. degree? And, undoubtedly, there are now so many clear data opened up to the Dental profession, and so ably dealt with in the well-marshalled essay of Mr. Gaddes, that the profession at large will soon arrive at a somewhat fixed line of demarcation to be considered ethically, the proper usage in separating the domain of our own specialité from that of either medicine or surgery in future.

One thought, however, has occurred to me which does not seem to have been mentioned, viz.; that in our trying to leave as conscientiously-wide a margin as possible in favour of the surgeon or physician, we must be extremely careful not to overstep the mark and so render our course altogether impracticable, except in the case of the more affluent of our patients; I mean, for instance, suppose we are treating locally a case of periostitis or other Dental lesion in which a saline aperient would prove no small adjunct to the cure, and further, suppose that the patient is of the middle classes, or, perhaps, poorer, is it likely that if advised to see a medical man in order that he may prescribe some such remedy that the advice would be acted on? Surely, expediency and common sense would contra-indicate the experiment, which failing, might jeopardise the success of our services.

I am, &c.,

MEDIA VIA TUTTISSIMA.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 82, Mortimer Street, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
3. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
4. All communications relative to subscriptions and advertisements are to be addressed to the Publisher, Mr. J. P. Segg, 82, Mortimer Street, Regent Street, London, W.
5. The Journal will be supplied direct from the office on PREPAYMENT of subscriptions as under:

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ANSWERS TO CORRESPONDENTS.

“H. W.”—You will find it in C. S. Tomes’ ‘Dental Anatomy.’

Communications have been received from Messrs. P. Langmore (London), F. W. G. Attwood (Redhill), W. Harrison (London), B. T. Hutchinson (Cape Town), S. S. White Dental Manufacturing Company, Ferd. Beuleck (Hamburg), Dental Manufacturing Company.

BOOKS AND PAPERS RECEIVED.

“Diagram of an Incisor.” ‘New England Journal of Dentistry.’ ‘Rapport sur l’Enseignement de l’Odontologie.’ ‘Calendar of the Dental College of the University of Michigan.’ ‘British Medical Journal.’ ‘Medical Times and Gazette.’ ‘Lancet.’ ‘Chemist and Druggist.’ ‘Pharmaceutical Journal.’ ‘Le Progres Dentaire.’ ‘Missouri Dental Journal.’ ‘Cosmos.’ ‘Ohio State Journal.’ ‘American Journal of Dental Science.’ ‘Deutsche Monatsschrift.’ ‘L’Odontologia.’ ‘L’Odontologie.’ ‘Correspondenz Blatt für Zahnärzte.’ ‘Transactions of Students’ Society, London Dental Hospital.’ ‘Dental Record.’ ‘Journal of the British Dental Association.’ “Dental Politics,” in ‘Cape Times.’

NOTICE.—We desire that it may be clearly understood that our pages are open to all for free expression of their views on matters connected with our profession. We only ask for terseness of expression and MODERATION IN TONE.

When otherwise unobjectionable, difference of political or other opinion will never be regarded by the Editor as a disqualification for the admission of any communication to the pages of the **BRITISH JOURNAL OF DENTAL SCIENCE.**

British Journal of Dental Science.

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VALEDICTORY ADDRESS DELIVERED BEFORE THE ODONTOLOGICAL SOCIETY.

By SAMUEL LEE RYMER, L.D.S. Eng.

GENTLEMEN.—IN vacating this post of honour, allow me to address you in reference to a few points which appear to be of particular interest on such an occasion.

The year which has just closed upon us can scarcely be said to have been conspicuous for great or startling events in the history of our Society, although it has certainly witnessed steady and useful work, well calculated to speed on the supreme object of our existence as a society, namely, the enlargement of technical knowledge—which means the elucidation of truth.

But before glancing at the several items which have engaged the attention of our monthly meetings, I must congratulate you upon the official reports which have this evening been presented. The Treasurer's report, perhaps, exhibits most certainly the prosperity or otherwise of our position year by year, and having regard to its significance in this respect, I think his lucid statement of accounts for the last twelve months may be regarded as entirely satisfactory, and as denoting a sound condition of affairs.

The librarian and curator have informed you that the respective departments under their management have received numerous additions. The carefully compiled supplemental catalogue of the library issued in June last, furnishes a desideratum which had been for some time felt; we are much indebted to the gentlemen who have watched over and so well maintained the efficiency of the library and museum,—the catalogue of the contents of the latter, I may say in passing—to which just and graceful allusion was made by my predecessor in office a year ago—has since been delivered

to the members, by whom, I am sure, its merits are deservedly appreciated.

To the editor of the 'Transactions' acknowledgments are due for the attention given to the issue of the publication of our proceedings month by month. The task is much more easy to criticise than to fulfil. I confess that before I had sufficient opportunity of becoming acquainted with the difficulties of the position, I sometimes felt that the appearance of the 'Transactions' was unduly delayed; but a better knowledge of facts has taught me that so far from this being the editor's fault, it has been to him a source of considerable anxiety and annoyance. Papers and communications, for the sake of exactness, are, according to the system at present adopted, sent in proof to their authors, with the request that the same may be corrected and immediately returned. From accident or inadvertence, serious delay often occurs before the proof is received back; hence inevitable loss of time. It may be worth considering as to whether the system cannot be amended, so that it shall be understood that proofs must be returned by a certain fixed date, unless the authors are content to accede to the revision of the editor alone. In this way the 'Transactions' could be delivered within ten days or a fortnight of each meeting, thus being in the hands of members with something like freshness, and the notices in advance, on the cover, would be so in fact, and not reach the eye after the occurrence of the events indicated. Interest in the proceedings of the Society must necessarily depend, to a considerable extent, upon the manner in which they are reported and distributed. In themselves I contend that the reports have been excellent, but, as I have ventured to hint, the period of issue is capable of improvement.

The importance of the editorial position has been realised by the council, and as our late editor was likely to be elevated to the highest position, it was considered a convenient opportunity to recommend the Society to create a new office in the election of an editor, who should, by virtue of such office, be entitled to a seat at the Council Board. This recommendation has now been formally agreed to, and I have no doubt that its adoption will be attended with good results.

Whilst upon the subject I may mention that the Council have arranged that, commencing with the current volume, the 'Transactions' shall be presented to our honorary and corresponding members. This course will, I think, commend itself to the Society as a compliment justly due to those whose services to our special branch of science have led to

their names being inscribed upon our honour list. It will also prove the means of regular communication with these distinguished gentlemen, resulting as we may well hope, in more frequent personal intercourse between them and the general body.

The death-roll of the year, happily, numbers few names, although representing men of high repute. In the loss of Mr. Clover, the eminent anæsthetist, a universal feeling of regret was experienced, and in that of Mr. Canton the Society has been obliged to part with one to whom it was very deeply indebted for unwearied exertions on its behalf for many years—commencing with its foundation. Mr. South has also, unhappily, passed away. These gentlemen were honorary members at the period of their lamented decease, when the Society passed fitting resolutions of regret, and also of condolence with their respective families.

Mr. Tucker, of Boston, a corresponding member, must be, I am sorry to say, added to the list. Besides these gentlemen we have also to deplore the loss of Dr. Roberts, a late vice-president of the Society, of Mr. Clement, of Bayswater, and of Mr. Heath, of Richmond.

Although, as already observed, the year may not have been productive of particularly extraordinary events, there is one of historical importance to us, which needs reference—I mean the consummation of the law of qualification, which has been in contemplation for so many years, and which, after most careful and exhaustive thought and discussion, came into force on the 1st of November. No one can, in this matter, properly accuse the Society of illiberality towards worthy men practising Dental surgery without recognised qualifications. The doors have been freely and widely open to these as well as to diplomatised practitioners for a quarter of a century. That limit having been reached—after long notice, widely given and frequently repeated—the portals are now irrevocably closed to all but the latter, and there can be no doubt that the policy thus pursued has been generous as well as wise. From henceforth, then, the Odontological Society can only be reinforced from the ranks of men who have proved their title to scientific worth in addition to honorable social *status*.

Of the unabated interest evinced in the Society's proceedings no better proof is needed than the uniformly good attendance at the stated meetings; and I have been pleased to observe, as an encouraging sign of the times, that our junior members are coming well to the front by taking part in the deliberations, and assisting in various ways, instead of leaving almost everything to the seniors. The time thus

occupied will, I hope, be regarded as having been profitably, as well as agreeably, employed.

I do not propose to detain you, gentlemen, with minute analysis of the papers and contributions of the session, because such will be fresh in your memories, and are stored for easy reference in our published records; at the same time I must not omit some mention of these valuable contributions, emanating as they have from different quarters, including this metropolis, the provinces, and the colonies, and showing, in a gratifying way, that the value of the Society is not localised in any sense, but, on the contrary, appreciated far and wide.

First let me refer to the casual communications. These have been varied, useful, and interesting. Information conveyed in this succinct form is generally of considerable value, and tends, moreover, to relieve any tedium which might arise from a consideration of extended scientific papers, given in unbroken series.

Referring to the papers of the session, it seems superfluous in me to remind you that we have had the pleasure and advantage of listening to some extremely instructive and suggestive addresses. In these Mr. Coffin, whose attention has been long and intelligently directed towards the correction of irregularity in children's teeth, informed the Society very clearly as to his plan of obtaining correct impressions for regulative arrangements.

Mr. Hunt, of Yeovil, in a paper of practical aim, demonstrated the perfection to which the beautiful material known as "celluloid" could be adapted to artificial dentures by means of a new apparatus devised by Dr. Campbell, who had, at a previous meeting, exhibited the machine referred to, and explained its operation.

From Auckland, in New Zealand, Mr. Edwin Cox addressed the Society, in a graphic paper, on a case of obscure diagnosis in the early stage, but which ultimately proved to be one of cancer of the superior maxilla, and costing the patient his life. This case is well deserving of consideration, especially in regard to the somewhat delicate subject subsequently introduced by Mr. Thomas Gaddes, and having reference to the "Limitation of Dental Surgery," a question which has also been under notice by the Odonto-Chirurgical Society in Edinburgh during the year. The discussions following on each occasion appeared to settle in one focus:—no hard and fast line could be devised; the good sense and judgment of individual practitioners would guide them in the right course. The index to our past year's volume of 'Transactions' will show at a glance that dental caries has not been lost sight of

as a subject of contemplation. Mr. Steele and Dr. Carpenter have, respectively, expressed themselves thereon—the one in a short but tersely worded paper, the other in an elaborate and important address. These communications, and the discussions which followed their delivery, taken altogether, appear to strengthen the impression even still entertained by not a few practitioners—after due allowance for considerable advance in knowledge—that there is room for further investigation before the origin of this increasingly prevalent disease can be determined with complete satisfaction. Difference of opinion may not here present a very wide divergence,—

“Not so deep as a well,
Not so wide as a church door,
But 'tis enough.”

In point of scientific merit the last paper of the year—that by Mr. Charters White—must occupy a high position. In this carefully worked and beautifully illustrated communication, Mr. White enlightened us upon a subject only to be grasped by the cultivated mind of the microscopist.

Passing from this cursory review of our own proceedings, I will, if you please, refer briefly to some portion of what may be termed the “outside work” accomplished in 1882.

In our special literature, as also in science and art, progress is perceptible, although the period has been one rather of application, observation, and investigation, of which the fruits will be more fully apparent in the future, than of present outward and visible sign. Amongst the several organisations aiming at the elevation of Dental Surgery as a professional calling, I venture to assert that none have stronger claims upon our active sympathy and support than the British Dental Association. Of the particular objects of this institution you are familiar; I need not therefore enlarge upon the zealous, able, and by no means unsuccessful management of affairs, dating from the period of its public inauguration, but a few words in reference to its first general meeting in the provinces will not be out of place. It was my privilege to be present at Liverpool, in August last, on the occasion referred to, and there joining many other members of the Odontological Society. None who attended could fail to be gratified at witnessing the happy result of the proceedings throughout. I should say that the prevailing impression left upon the mind of each one would, at the close, be this, namely, that proof had been adduced of the existence of professional spirit within the Association of so vigorous a nature as to promise certain triumph in the prosecution of its objects over all obstacles. These objects

being in themselves patriotic and beneficent, we may well wish the organisation "God speed;" nor need we stay to inquire as to whether the reading and discussion of papers on pure science would not be better left to societies such as ours. If time can be utilised for scientific work at these annual conventions without loss in other respects, far be it from us to feel any narrow-minded jealousy on that score; but I am very much inclined to believe that the political requirements of the near future will prove of immense importance, and that it will be necessary on the part of the Association to concentrate all available resources in their consideration. The recent appointment of a joint committee by the Colleges of Surgeons and Physicians is a step, to the Dental Surgeon, of interest, as the object proposed may, if carried out, influence his speciality for weal or for woe, according to the manner of its achievement.

On the whole we have no cause to complain of the professional position as we find it to-day. Sometimes, however, I fancy we are prone to cry up our own times a little too much in comparison with those which have gone before—a weakness which appears to have existed in every recorded epoch. The other day I turned over the leaves of an old and neglected book on surgery, long in my possession, and was surprised at the advanced intelligence of the author. The book is entitled, 'A Course of Chirurgical Operations demonstrated in the Royal Garden at Paris,' by Monsieur Dionis, Chief Chirurgeon to the late Dauphiness and to the present Duchess of Burgundy. It is an English translation of the Paris edition, and reprinted in London in 1710.

The nature of the contents (bearing in mind the date of issue) indicates remarkably advanced views in regard to surgical operations, including those of Dental Surgery. Deeming this old book of sufficient attraction to be placed in our library, I shall have pleasure in presenting it thereto, but I may in the meantime observe that the "Demonstrations" it includes were given nearly 200 years back. Mr. Weiss has within the last few days published some interesting remarks upon Dental Surgery 100 years ago, which go far to prove that our French neighbours were more enlightened upon the subject than ourselves at a date anterior and comparatively remote to that quoted by Mr. Weiss.

A perusal of Dionis's work shows the author to have been a man of high professional honour, as well as of keen perception. His teaching and practice were founded upon scientific knowledge and experience of no mean order, and his efforts were directed towards a more complete study of anatomy than prevailed in his day, amongst men preparing for the

practice of surgery, so that the art should in the future be exercised dexterously according to the light of science. In his preface, Mr. Dionis, after reference to "the surprising effects of operations which set such a value on Chirurgery," and after urging the importance of a complete professional education, explains that "Paris furnishes the learner better with means than any city of Europe; there are held publick demonstrations in three different places of the city: at the King's Garden, the Medicinal School, and at St. Cosme, which all being performed by sworn master-chirurgeons of that city, are laid down with utmost exactness." For eight years Dionis gave his "Demonstrations" in the Royal Garden, the concourse of students being so great that the largest hall would not hold half in attendance, so that tickets were distributed to chirurgeons' apprentices, that they alone might enter to the exclusion of those who were placed to serve their time in barbers' shops and the like.

The demonstrations of the course are ten in number, suitably subdivided, and treat of numerous operations. The seventh demonstration is of interest to us, and proves that the importance of Dental Surgery was fully acknowledged by this man of note so long ago.

This particular demonstration consists of four sections:

1. "Of the Polypus of the Nose."
2. "For Bleeding of the Head."
3. "For the Hare Lip."
4. "For the Gums and Teeth."

Prefixed to each subdivision is a woodcut exhibiting the various instruments and appliances to be used in the several operations to which reference is made in the text.

Time will not admit of lengthened quotations this evening, so that I can only place before you some reference to section No. 4, although all will be found worthy of consideration at leisure.

"Of operations practised on the teeth," our author observes, "the teeth alone at present [presumably about the years 1700] furnish the whole employment of several persons called operators for the teeth; it must be owned that these gentlemen, the sole object of whose labour are these parts only, may excel in their art rather than the chirurgeon whose science is of an infinite extent. But yet he is not to neglect this part of chirurgery, in which he is to be acquainted that seven sorts of operations are practised.

"The first is the opening or widening of the teeth when they are close together.

"The second, to cleanse them when they are foul.

"The third, to hinder their rotting.

"The fourth, to stop the holes which grow in them.

"The fifth is to file them when they are too long and jagged.

"The sixth, to pull them out when rotten.

"And the seventh, to substitute artificial ones in the place of the natural."

Under these seven heads most careful directions are prescribed, several closely printed pages being devoted to particulars. From these, too, it would seem that really good practitioners of Dental Surgery existed at the time. For instance, we find the name of Monsieur Carmeline recorded as being "a very able operator for the teeth," who had practised re-implantation.

In stopping, it is explained that gold, silver, and lead were in use. The manner of adopting artificial teeth so as to obviate the inconvenience experienced from their loss in articulation, and to improve appearance, is dealt with; but I do not find these substitutes spoken of as useful in mastication, or indeed as particularly successful at all.

The different forms of Dental forceps of the present are properly regarded as effective and beautiful in their adaptations, but after all they are no more than the perfected development of those described by M. Dionis. He says: "A tooth forceps, called in Latin *Denticeps*, is a sort of pincers whose end, which grasps the tooth, is crooked and cleft like a fork in order to take the faster hold. It may be used as well in the upper as the lower teeth, and is one of the most ancient instruments in chirurgy, and has been used in all ages."

I must ask you to pardon me for thus digressing and introducing to notice the work of a thorough-going and conscientious surgeon, who had given all this thoughtful attention to the treatment of Dental disease, more than a quarter of a century prior to the birth of our own John Hunter, of immortal memory.

You are aware that, according to a custom which has existed for some years, a past President would now be called upon to fill the chair, and that Mr. Ibbetson stands next in rotation. I need not tell you how much pleasure it would have afforded the Council to have recommended Mr. Ibbetson for the second time for the distinguished post, but it grieves me to say that, owing to the severe domestic calamity which has so recently befallen him, he feels quite unequal to undertake the duties and anxieties of the Presidency. I am sure that every member will join me in expressing our deep regret that the Society is deprived the advantage of seeing Mr.

Ibbetson in the chair, and in offering him our sympathy and condolence upon the severe loss he has sustained.

In the election of Dr. Joseph Walker as my successor, under these circumstances, the members are to be congratulated. Dr. Walker, for a long series of years, has evinced the utmost interest in all that relates to the progress of Dental Surgery, and particularly to the welfare of the Odontological Society. I am quite sure, therefore, that the dignity of the Society will, under his presidency, be fully maintained.

Gentlemen, in bidding you "farewell," it only remains for me to thank you, in all sincerity, for your generous support during the period I have had the honour of presiding here, and I am especially indebted to the Executive Council, and to the honorary officers, for their confidence and ever ready and invaluable assistance.

A CONSIDERATION OF SOME OF THE CAUSES WHICH GIVE RISE TO DENTAL DECAY.

By ALFRED CARPENTER, M.D.

(Continued from p. 105.)

SUPPOSE we minutely examine the oyster shell. Sections of this shell, when carefully prepared, make very pretty microscopical objects, and show markings which correspond very closely with the lacunæ and canaliculi of the *crusta petrosa* of the human teeth. Oyster shells consist mainly of carbonate, not of phosphate of lime; the phosphorus is retained by the animal, and it does not become an excretion in the shell: it is, however, to be found in the constituents of the tissues. The phosphate, not the carbonate, is the principal inorganic ingredient of the human tooth. There is here, then, a manifest difference between the excretion which forms the shell of the mollusk and that which forms the tooth of the vertebrate animal. You may ask what I mean by this expression of excretion. It is simply the statement of a fact that every deposit which is made by any organ in the body is an excretion as far as the rest of the body is concerned. The deposit is able at times to destroy the life of the rest if it be kept in contact with the body at the wrong time. That whether it is urea, which is the organic salt.

excreted by the kidneys, or the carbonic acid which is thrown off by the lungs, and the cholesterine which the liver gets rid of, and which is probably one of the products of nerve action; the epithelium, which is shaken out of one's flannel shirt when the latter has been worn too long, or even any secretion such as milk or saliva, these are all excretions, and once formed they must not be retained in the organ or cells which have formed them, or mischief will result to that organ. The hair and nails are the manifestation of an excretion: the materials which form those parts, and which are intended as defensive organs, having been used up in some special work about the body, are no longer required within the precincts of that body, and being done with, the materials which form those appendages are exuded from the body. The materials of which the shell of a mollusk is formed are in the same category as those of the nails and hair of vertebrate animals. They are done with as far as the nutrition of the active organs of the body is concerned, and they become excretions, and at the same time are made into protective organs. The phosphate of lime of which the bones, and especially the teeth, of vertebrate animals is formed, is in the same position, for it is an excretion. It is done with, and ordinarily it cannot again enter the circulation and be used up for any other purpose. There are some exceptions to this rule which allow of the excreted material being altered in its chemical character when required for admixture with other extraneous matter, and then it may be absorbed again for immediate use and ultimate removal; but as a whole, the rule is as stated. An excretion is a poison as far as the rest of the body is concerned. If that excretion is suddenly checked, and the materials which form it are thrown back again into the animal economy, mischief will result, and disease be set up. With regard to some secretions, the quantity is comparatively unlimited, but with others it is not so, the quantity is small and cannot be largely increased. We have instances of abnormal growths, such as Mr. Darwin alludes to in his work on "Animals and Plants under Domestication," in which there is a notice of the relation which holds between the abnormal growth of hair as compared with teeth; it sometimes happening that excessive development of hair has been attended by an edentulous state, as if nature could not form more than a certain quantity of some material, and if one is formed in excess there is a deficiency of the other. Two men were shown in Paris some years ago, who were father and son. They were without teeth, but with their faces and necks completely covered with shaggy hair, like unto Scotch

terriers. It seemed as if in these cases the organic matter required for the hair was provided at the expense of the phosphate of lime; or perhaps the absence of the latter excretion allowed the hairy development, and then the organic matter which was required for tooth development could not be diverted back to the dental tissues, or was not at hand at the moment at which it was wanted.

If the organism is defective in its constitutional parts at its first foundation,—if the products necessary for first development are wanting, we may have defect in the first lines of life, and hence a tendency to decay may originate at the first moment of our birth, and we may say with Pope—

“That man,
The moment of his breath,
Receives the lurking principle of death;
The young disease, which must subdue at length,
Grows with his growth, and strengthens with his strength.”

It has been fully recognised that phosphate of lime is the principal organic element in the chemical constituents of the teeth; it also forms a large part of all bony matter; it has been assumed that the formation of bone is the main purpose for which the phosphates are required. I am bold, however, to think that this is clearly not so. Phosphate of lime is a constituent of all organic life, or at least, some salt of which phosphate of lime is the result. It is probably the sequence of the act of living. Some portion of it plays an active physiological part in the manifestation of vital phenomena, and no life can be carried on without it, either as an active part or as a result of action. It is the principal inorganic matter which is first used up in the progress of development, and there must be depôts for the used-up material. There exists no tissue in animated nature which does not contain phosphate of lime in some form or other as the sequence of the activity of that tissue. It has an influence upon organic life: possibly in the more soluble form of superphosphate, and its presence is most likely absolutely necessary for the changes which take place in cell life. It is known that it exists largely in nerve matter. That phosphorus, or some salt of phosphorus, in some form or other, is indispensable for nerve development; and it is probable, therefore, that those bodies which are placed low in the scale of creation, and which do not possess a distinct nervous system, have a certain power, resulting from the presence of a salt of phosphorus, which enables them to carry on their nutritive and other necessary actions without the intervention of a brain, or spinal cord, or even a nerve ganglion of any kind. The presence of some salt of phos-

phorus is absolutely indispensable for the formation and continuance of cell growth; and in the production of new cell life the phosphate is formed, and after a time has to be removed from its position in the animal economy. It becomes an excretion, and has to be removed from the tissues of the animal. Even before a regular nervous system is formed, and in the early days of organic life, we find its exudation prepared for by the epithelial structures.

Phosphorus is present in the lowest forms of vegetable life as well as in those which are animal. It exists in an appreciable quantity wherever there are fibres and cells. It is found as a necessary constituent in our daily food. It is abundant in milk, in fish, and in wheat. The more active the process of development which is going on, the more do the phosphates in some form or other abound. The more active the process of development is going on, the larger is the quantity of phosphorus in the organic matter of the specimen under examination. It has been shown that wheat grown in a soil completely deprived of phosphates can grow into a plant but cannot produce grain. There is a great difference, an antagonism, indeed, between animal and vegetable life in this matter, so that phosphates are not excreted as if they were used-up material by plants, but they are laid up principally as a store in the seed of the plant for future use. The phosphate does not form an intrinsic part of the skeleton of the plant, but it accompanies the albuminoid substance whose existence is anatomically independent of the solid tissues. It appears to be a special part of the work of the plant to secrete this in the material which it prepares for the nourishment of animals, who feed upon the result, and are able to carry on their own functions by its means. There is an important distinction, therefore, between the position of the phosphates in the one as compared with the other; and it corresponds to some extent to the position occupied by carbon and oxygen in the two kingdoms. The latter element is, as you know, excreted by the plant as the result of its organic life, the carbon being retained and used in building up the tissue of the plant; but in the animal life it is the carbon which is excreted as carbonic acid, the oxygen being exchanged for it. The phosphorus is in combination with the organic, not the inorganic, parts of the body. The larger the amount of phosphoric acid in a given quantity of organic vegetable matter, the more vigorous are the actions which are going on and the greater is the vitality at work in the material under examination—not, however, for the purpose of forming a skeleton. I wish you to bear in mind that it is in the albuminoid material, and not in the

skeletons of plants, that phosphoric acid, or some salt of which phosphorus is the base, is most abundant, and that most plants cannot perfect their species and prepare seed for future developments if phosphorus is withheld. There is also a point, in which there is no antagonism between plants and animals, which is worthy of notice as bearing directly upon our subject. There is a special liability to disease among plants as well as animals under certain conditions. The epidermis of plants which are not sufficiently supplied with phosphoric acid is prone to suffer from disease, and a wheat-field in which the soil no longer contains phosphate salts is very liable to blight, to rust, and to mildew. There is a kind of defective nerve power, so to speak, in the structure, which lays the plant more open to the attack of outside enemies; whilst there is absolute failure in its ulterior development, it cannot perfect its epidermis properly. If there is no phosphate in the soil at all, the plant will grow as long as there is phosphorus in the seed itself, but no longer: as soon as this reserve is used up the nerve force is lost and the plant decays. Can we not, in this view of the matter which we obtain from the vegetable kingdom, draw some inference which may be of service in considering the cause of decay of teeth in animated nature? If phosphorus, in some form or other, is not provided in the food we eat, it is found by every-day experience that the constitution suffers exceedingly. There are conditions of life in which it is not so provided. In some of the great cities of the Empire there is, or was, a great deficiency in the natural food which infants require for proper growth. In those places rickets (or rachitis) abounds. This is a disease of bone in which the phosphate of lime is very deficient: the bones are soft and cellular; the teeth are also defective, and the intellect inferior from inertness of cerebral action.

I am of opinion that this state is brought about by a deficient supply of proper pabulum for natural development. The child is not nourished by its own mother's milk, and cows' milk cannot be obtained in sufficient quantity and quality by the poor people in such cities; they either do not get it at all, or if they do get it, it has been watered, or it is supposed by the ignorant parents that something else is better for them. They do not get fresh vegetables, which contain phosphates in the soluble form, and they are supplied with farinaceous food, in which the larger portion of the cuticle which contains much of the phosphoric salt has been removed by decortication. The result of this kind of feeding is that the nervous system does not get its proper supply for healthy developments, and as a sequence those organs which

are dependent for their own development upon the composition which results upon the act of brain-cell growth cannot be perfected. The teeth fail in their proper construction; there is more organic than inorganic matter in their structure, and, like the proper skeleton, they cannot perform the functions which nature intended that they should do. A purely flesh diet will produce rickets, and lead therefrom to teeth failure.

On the other hand, it has been noted that if phosphorus is given in excess of the requirements of the system, as has been done sometimes by experiment, it will itself set up mischief in the bones, especially if the lime salts are withdrawn; and it is found that in those animals in which rickets have been thus produced, another material called lactic acid is found in excess in their structure and in their excretions. If lactic acid, such as usually develops in milk which has been kept too long, be given as a food, and which the poor children in our great cities too often get every day when they get milk at all, whilst phosphorus and lime salts are withheld, rickets, or at least a soft state of bone tissue, is rapidly developed.

In some large cities, such as Glasgow for instance, it happens that lime is not a constituent of the water supply. Children therefore run the chance, in that and similar cities, of having no lime provided in the water, whilst no phosphate is at hand such as milk and vegetables give; they ignore the advantage which oatmeal supplies, and which Scotchmen as a rule think much of, and as a consequence, rickets and its allies are common diseases.

There is another disease which used to be very common in the naval service of this country in the last century, viz. scurvy. Two centuries ago it was a complete scourge in all Northern Europe, as well as in our own marine service, but the discovery of its cause has materially diminished its incidence, though it is even now in our own day much more frequent than it should be, and its effects are not always recognised in the minor form in which it does even now appear amongst us, both in the sick room and also among poor people in thickly-peopled districts.

Its first incidence is upon the gums; the teeth loosen and decay; there is a tendency to hæmorrhages and effusions of blood from mucous membrane; the slightest injury to the skin produces a bruised appearance. The cause for this condition, in my opinion, is the absence of fruit and vegetables from the common diet of the sufferers. The effect of fresh fruit is to diminish those acids which result from the consumption of a flesh food, which is too highly

nitrogenous. The alkaline vegetable salts which fresh fruits contain become decomposed into carbonates, which pass off with the urine, and take with them or assist to discharge by other means some of the nitrogenous matter which exists as *débris*, which would, if left there, form lithic acid and its allies. The small quantity of a phosphate salt which they contain is used up in nerve nourishment, and a phosphate of lime is prepared. Fruit and vegetables are extremely advantageous, therefore, in those conditions of the system in which there is a lithic acid diathesis; they prevent the formation of urate of soda, which often by its deposition in the periodontal membrane induces those diseases of the teeth to which the gouty classes are especially liable. Improper food in infant life does lay the foundation of disease in the dental appendages, which, following upon those produced by hereditary causes, are very serious in their result. So improper feeding in our later days will do the same. I sometimes meet with people who never touch fruit or vegetables in their daily diet. They are on the high road to suffer from those diseases which result from a diet which is too nitrogenous—such diseases as gout, fatty degeneration, scurvy. They are depriving themselves of the pabulum which is necessary for the proper nourishment of both nerve and bone, and are keeping within the precincts of their body material which ought not to be there. They either have lost or will lose their teeth sooner than other people, simply because the supply of material necessary for maintenance is not afforded. I sometimes meet with sick persons who have bleeding gums, continuous neuralgia, many carious teeth, and a tendency to hæmorrhage produced by the slightest injury, who never touch fruit, and seldom eat vegetables, because they believe that those articles disagree with them, and, as they suppose, set up dyspeptic and other gouty complaints—just as some people will not allow the housemaid to dust their libraries and book shelves because of the dust they are likely to kick up, and the displacements which are sure to follow. It is a wonder that dust and dirt abounds in the library, and *débris* of a wrong character finds a settlement in those positions in which such *débris* is out of place? It is just so in the human economy. If the diet is not of a proper kind, if some elements are ignored altogether which nature intended us to take, there is sure, sooner or later, to be a defect in our excretions, and the fundamental condition of the body is altered. It is possible that the teeth are the dépôts for the deposit of the phosphate of lime, which is formed in very minute quantity in the first months of human life, and before the bones are

ready to receive it, it may be the *débris* of the first nerve cells which form in the infant. Let there be some defect in innervation as may arise in the progeny of a syphilitic individual, and we may see the result in the defective character of the phosphate of lime which is deposited in the cells of the ivory and the enamel membrane of the new development. It is not a pure salt, it contains something else besides phosphate, and as a result the cells themselves are imperfect, both in shape and number, the striæ upon them are unerring witnesses of the taint which the father has inflicted upon his own progeny, and which taint will probably show itself later on in the life of the child by defective nerve centres, by a mental weakness, or it may be by paralysis, or by insanity, and other nerve disorders, which will require much care to prevent their development, even if they can be prevented.

(To be continued.)

THE RETENTION OF ARTIFICIAL DENTURES.*

By T. COOK PARSON, M.R.C.S. Eng., L.D.S. I.

GENTLEMEN.—The object of this paper is the consideration of the best modes of retaining plates *in situ* without injury to the remaining natural teeth. The caries produced by the employment of clasps and stays of various kinds calls for a protest against their use, and an effort on our part to devise other means of attachment which shall have no such injurious effect.

We will briefly review the various methods of retaining artificial teeth in the mouth:

Firstly, pivoting for single teeth. I will not detain you with a description of all the numerous devices and modes of performing this operation, but will consider a few of them. As a preliminary step we should ascertain the condition of health of the root to be used. If the nerve be still alive, no great difficulties will have to be overcome; it must be destroyed, either by a rapid turn of a drill forced at once to the apex of the root, or by the application of arsenic. The

* Read at the Annual General Meeting of the Western Branch of the British Dental Association.

canal must then be cleared and sealed up. When this can be done without producing any inflammatory symptoms the succeeding steps may be taken. If the root to be pivoted contains a dead, decomposed nerve, or, should an abscess be associated, it must be thoroughly disinfected and treated until a healthy condition is re-established. The apex of the canal should now be filled with soft gold about one-fourth down, and the remainder prepared to receive the pivot. The point of most importance for the permanence of the operation is, that no portion of the surface of the root may be left exposed, whereby it may become softened and gradually destroyed by caries. My own *modus operandi* is to make use of a tube which has a thread cut on the outside, as used by Mr. Balkwill. They can be obtained at any of the dépôts. In conjunction with these screws I use flat discs of pure gold or platina, thinned towards the edge, with a hole in the centre large enough for the screw, but not the screw head, to pass through. A small collar of gutta percha placed between the root and the disc will, when screwed into place, make a perfect joint; any surplus may be cut away, and the edges of the gold or platinum finally burnished down and finished. Should the root be so decayed that a thread can only be made for the upper part of the screw, amalgam or oxychloride may be used to keep it in position. I find Mr. Balkwill's split pins sometimes give way, so make mine solid and a trifle larger, taking the extra size from the thickness of the tube, to fasten in the crown. I roughen the pivot slightly, and press into place.

One of the most perfect methods is that invented by Dr. Bonwill; the operation is fully described in the journals, but requires some little practice for successful accomplishment. With these crowns bicuspid and molar roots may be restored and made useful for some years.

Another method practised by some first-class operators is to fix the crown and pivot by filling it in with cohesive gold, at the same time restoring the contour of the tooth.

A single lost tooth may also be fastened to the adjoining teeth on either side, should they both be decayed, a pivot being soldered transversely across the back of the tooth. Each end is bent to go into the decayed cavities on either side, and retained in position by means of cohesive fillings. A pivot is often found very useful in combination with other means of securing partial dentures in position. It may take the place of a band or stay which could not well be concealed from view. In all cases where a pivot is intended to be used, before taking the impression prepare your root. The difficulty now is to get the direction of the canal in

your model. The only certain way of doing this is by using plaster for the impression, a pivot being placed in the canal in the root to give its direction and depth. A little practice will soon enable the operator to obtain a perfect impression.

I will next proceed with the consideration of bands, stays, and wires. By their use great steadiness and firmness of the plate is obtained, and should they be hidden from view, a satisfactory case, at any rate for the time, is the result. There is, however, one very serious drawback, the results of which are continually presenting themselves to our notice, and of which our patients are becoming quite aware, and that is, the action produced on the teeth clasped, decay being often produced by the chemical influence of decomposing débris of food left between the tooth and the clasp or other portions of the plate resting against the tooth. Patients now frequently stipulate that their artificial teeth shall not be fastened with wires, as they say they cut off the teeth which are made use of.

Should clasps be used, extreme cleanliness is the only safeguard. The difficulty in getting our patients to understand and act up to our instructions in this respect is very great, and I have abandoned, as far as possible, the use of clasps or stays, or any method which requires the plate to rest against the teeth at all.

I have, however, made a modification in the shape of the clasp, which leaves the surface of the tooth almost free. Two methods having the same end in view are given in Harris's 'Dental Surgery,' one by Dr. Stokes, which consists in soldering gold tubes to the plate to carry wooden pivots, which are left slightly projecting to press against the mesial and distal walls of the tooth. This leaves the buccal and palatal surfaces quite free. The great disadvantage of this method is that the wooden pivots require frequently renewing, and also become impregnated with decomposed matter, which renders them very offensive. The gold tubes are also in the way in mounting, and food is retained round them. Another plan is recommended by Dr. Spalding, who uses thick narrow clasps, secured to the palate by two or more standards. With long teeth the spring is put high up on the tooth, whilst on short teeth the plate is to be filed away, except at the points necessary for the soldering of the clasp. In this way much of the tooth is left exposed to the cleansing action of the tongue. I have frequently tried this method, and in many cases it answers well; but the food accumulates about the standards, and in short teeth, such as you find with young patients between twenty and thirty, whose teeth it is most desirable to save, the clasp entirely covers that

portion of the tooth which it is most desirable should be left exposed.

I will now demonstrate to you my own modification of clasps, which has for its object the smallest possible contact with the tooth. I have with me a plate, which I will pass round to better illustrate this method to you. The plate is cut away from each tooth (even in lower plates this may be done, providing spiral springs are not used). In bending the clasps they should be made to fit on the gum round the tooth, but still to be quite free from pressing on it. One end must be soldered to the plate; the other end, which is to rest against the tooth, should have been previously fused into a small round knob and placed so as to catch on the tooth just below the most convex part of the posterior buccal surface; the antagonising knob is soldered to the plate, or to a standard if the tooth be long, and placed near the anterior palatine surface.

As is generally known, a ball resting on any surface only touches it at one point. The smallest amount of contact must therefore be obtained by this means, and should the food lodge at these points, at most a small round cavity of decay would be formed which is very easy to fill. I have used this method almost exclusively where clasps have been required for the past three or four years, and have found it most successful. It is cleanly, easy of adjustment, and secures the plate quite as firmly as any clasp could do.

The next method of retaining plates is by suction, and is one which is becoming more used every day. It is most applicable in edentulous cases, but is now also largely used for partial cases. Our patients ask for it continually, as they say the plates so made do not decay their other teeth; and in this particular they are quite right, although, if a root is present, I prefer for small cases to make use of a pivot or my own method, as more security is gained, and, instead of covering up the whole of the palate, a small plate suffices.

The most important preliminary matter is the condition of the gums, it is very necessary that they should be got free from inflammation caused by diseased roots and badly-fitting plates, &c. The impression material should be of such consistence as to produce a model that will secure the artificial denture bearing equally all over the palate or, if anything, more upon the ridge. This end may be obtained in plaster by introducing it into the mouth whilst still very soft, should the ridge be hard and palate soft, or by waiting until the plaster has commenced to stiffen when the ridge is soft and palate hard; it can thus be made to compress the soft gums, or take the impression without in the least displacing them.

The firmness of the adhesion must depend entirely upon the plate being made to fit the model accurately; with vulcanite this is an easy matter, but with gold it is found much more difficult. I frequently combine the two materials, using gold for strength and rigidity, with an extremely thin layer of vulcanite covering it, for obtaining a perfect fit. I deem rigidity one of the most important features in suction pieces; of course if the plate is springy it alters in shape every time any pressure is exerted upon it. The teeth should be so arranged as to antagonise perfectly, the molar teeth being set so that the line of pressure does not fall outside the alveolar ridge.

In partial cases the plate should be cut entirely free from the natural teeth and stumps, any stumps left in should be well filed down, so that as the piece sinks into the gums from the pressure of the lower teeth it may not bear unduly on any part, or be kept back at any one point by pressing on a projecting stump, so as to cause rocking. The use of suction chambers on an unyielding surface is, as a rule, unnecessary; an accurately fitting plate will be found to stay up as well without a cavity as with one. If made at all it should be shallow and rather large in size; it may then allow an indifferently fitting plate to work up closer to the ridge and prevent its rocking on the roof. In very flat mouths with scarcely any perceptible ridge, the cavity when filled with the gum tends to prevent lateral motion. Another device for obtaining more suction is by cutting a groove round the outside of the ridge—the Fulsome ridge—this I have found of value in some cases, giving more motion to the plate in mastication, without letting any air in.

Spiral springs are now almost a thing of the past. They are, however, extremely useful for temporary sets after the extraction of a great many roots, and where no teeth remain the plates cannot be retained in any other way for any length of time; the rapid alteration of the gums would soon loosen a suction plate. The use of springs necessitates a lower plate being made, and should no lower teeth have been lost a plate is made to cap the back teeth and give attachment for the springs. This method must now be considered a thing of the past. Springs are certainly preferable to a badly-fitting suction plate, which would be likely to suddenly drop on the tongue with every movement of the lips or cheeks.

Springs are troublesome from the fact that they are very liable to accident, and should one get broken an immediate visit to the Dentist is necessitated; they are also apt to excoriate the cheeks, especially when first worn, and also to

cause the lower plate, when only the incisors are standing, to slide back out of place, causing the front portion of the plate behind the incisors to cut into the gum, the sinking also destroying the antagonism of the teeth.

CYSTIC TUMOURS OF THE JAWS, AND THE ETIOLOGY OF TUMOURS.*

By F. S. EVE, F.R.C.S.,

ERASMUS WILSON LECTURER AND PATHOLOGICAL CURATOR OF THE MUSEUM OF THE COLLEGE, AND SURGICAL REGISTRAR TO ST. BARTHOLOMEW'S HOSPITAL.

I HAVE chosen for the subject of this lecture the various forms of cystic tumour of the jaws, because this splendid museum has afforded me exceptional advantages for the study of a variety of morbid growth, which has been described as multilocular cystic tumour, cystic sarcoma, adeno-sarcoma of the jaw. This disease much more commonly affects the lower than the upper jaw. It first makes its appearance as a small swelling near the socket of a tooth, and slowly increases, attaining sometimes large dimensions. When affecting the lower jaw, the tumour grows within the substance of the bone, expanding the compact wall, which forms a more or less complete capsule around it. A section displays an agglomeration of cysts separated by septa of dense fibrous tissue. The septa are as a rule partially and sometimes completely, ossified, as shown by a beautiful specimen in the museum of St. Bartholomew's Hospital (No. 537).†

The size of the cysts varies in different specimens. The more common form of tumour is composed chiefly of large cysts from half an inch to an inch or more in diameter, the other, almost entirely of small cysts, so that a section presents the appearance of a honey comb with irregular cells. The septa between the cysts are, in the latter usually ossified. The contents of the cysts differ even in the same tumour; they may be filled with a white glutinous colloid material, with a brownish serous fluid, or with a reddish friable substance, which is more commonly met with in the smaller tumours, or in the more recently formed portions.

* Lecture delivered at the Royal College of Surgeons of England.

† Described by Mr. Coote, 'Lancet,' October 10th, 1857.

In a specimen (R. C. S. Museum, No. 2203) described in Mr. Heath's exhaustive work,* a large cyst is almost filled with solid lobulated proliferous growths, projecting from its walls; in the other portion of the tumour the cysts were filled with serous fluid.

When occurring in the upper jaw, the growth projects into and distends the antrum; it then usually possesses the ordinary clinical appearances of a solid tumour in that cavity. The general characters of such a growth are shown in a specimen (No. 2202) from the College museum. It may be observed that the cysts are smaller, and the proportion of solid matter is much greater than in the majority of the tumours of the lower jaw.

Of the twelve specimens of multilocular cystic tumour which I have had the opportunity of examining microscopically, and in four other recorded cases in which microscopic examinations were made, all presented the same general structure. I think it therefore very improbable that a form of multilocular cystic tumour of the jaw exists, such as has been described as *simple* multilocular cystic disease. Again, the unilocular cysts—occasionally met with in the jaws—must be considered as distinct in their nature from the multilocular tumours; for I have been unable to find recorded in literature, or preserved in our museums, a single example of a unilocular tumour presenting similar peculiarities in its minute structure.

The general clinical and pathological characters of multilocular cystic tumours of the lower jaw are well illustrated by a specimen presented by Mr. Keetley to the museum of St. Bartholomew's Hospital (No. 536). The tumour was removed, with one half of the lower jaw, from a lady, æt. 45 years, who had noticed a swelling on the left side of the jaw ten years before coming under observation. It increased in size at first very slowly, and during the last year more rapidly, but neither caused pain nor affected the general health. The submaxillary glands were not enlarged. Ten years before the tumour was observed she had for a long period a discharge from the socket of an imperfectly extracted tooth, and was told by a surgeon that the jaw was necrosed. Near this part the tumour appeared. It involved the left half of the lower jaw, extending from the angle to the symphysis; its outer and lower surfaces were covered by the thin expanded external lamina of the bone. The left incisor, canine and bicuspid teeth were crowded together at the upper and anterior edge of the tumour; the

* 'Diseases and Injuries of the Jaw,' second edition, p. 304.

molar teeth had disappeared. A section of the growth presented the usual characters of multilocular cystic tumour, the cysts being, for the most part, of large size. They contained either brown serous fluid, colloid material, and, many of them, a reddish friable substance, especially near the symphysis, where the tumour was still encroaching on the bone.

Under the microscope, the solid portions of the tumour showed branching and irregularly arranged columns, composed of small round epithelial cells, which resembled those in the deeper layers of the epithelium of the gum. The columns, in longitudinal section, showed bulgings with intervening constrictions on their sides. In transverse section they appeared as alveoli inclosed by well formed fibrous tissue. A lining of elongated cells formed, in places, the peripheral layer of the cell-columns or masses. The cells occupying the centres of the columns were much enlarged from commencing colloid degeneration; and portions of the tumour, containing small cysts, showed that the central cells, or the whole contents of the alveolar spaces, had undergone colloid degeneration. The tumour, apparently, grew by the formation of sprouts from the columns of cells, which formed its primary constituent; and, probably, by the subsequent cutting off of the sprouts, the alveolar spaces were formed. The cyst-formation evidently resulted from the expansion of these spaces by colloid degeneration of their epithelial contents, and the accumulation of fluid within them as in cyst-formation elsewhere.

The other tumours I have examined correspond to the description just given in the essentials of their minute structure; they presented, however, minor points of difference, such as are observed in any variety of morbid growth. In some tumours, the tendency to degeneration of the cells was slight, and the cyst formation was in consequence scanty; these were composed largely of irregular masses of small epithelial cells, with numerous round patches of degeneration scattered throughout them. In many instances, the outer layer of cells composing the columns or masses were elongated, or imperfectly columnar. This arrangement of the cells, when associated with colloid degeneration of the central cells, gave the columns a close resemblance to gland-tubes, and led to the supposition, in some cases, that the tumour was an adenoma. The appearance of gland-tissue was, in the specimen, very closely imitated by the approximation of columns placed parallel to each other. It is, however, most improbable that these tumours have any connection with gland-tissue, for both Waldeyer

and Klein assert that there are no mucous glands in the gum itself, an observation which I have verified.

Two cases of multilocular cystic tumour have been described in Germany by Drs. Falkson and Bryk, in which the columns and alveoli composing the tumour nearly resembled, in their minute structure, the rudimentary enamel organ. In Falkson's case, the tumour grew within the symphysis; it occurred in a woman aged forty years, and had been growing ten years. It consisted microscopically of cylinders and alveoli, lined by a single layer of regularly arranged columnar cells inclosing a delicate network, formed by the anastomosing processes of stellate cells. In Bryk's case, subsequently published, the microscopic appearances of sections of mucous membrane covering the tumour presented precisely similar appearances. Round cells were, however, observed within some of the columns, and small rods, or masses of nuclei, were scattered throughout the tumour.

Both of these specimens possessed the usual clinical and naked eye characters of multilocular cystic tumour, and resembled the specimen first described, both in the manner of their growth and in the mode of the cyst formation. The resemblance which, in their microscopic structure, they bore to the rudimentary enamel organ, led to the supposition that they were connected with the enamel organ of the tooth-follicles. This opinion Bryk thought to be supported by the clinical history in his case. The tumour, which was the size of a fist, was removed from a peasant, aged thirty-two. When six years old, he sustained a fracture of the lower jaw near the symphysis from the kick of a horse. The fracture remained for some time imperfectly united, and, during the year following the accident, he pulled out ten loose teeth; no others formed to replace them. At fifteen years of age he first noticed a swelling of the chin, and three years later many small knobs, of the size of hazel-nuts, had formed on one side of the symphysis at the site of the injury. The tumour subsequently grew rapidly. The inflammation of the bone following the fracture, according to Bryk, originated the disease by acting as a disturbing agent upon the forming or already formed tooth-pulps. The teeth extracted by the patient were, he thought, all milk teeth, no permanent teeth being subsequently formed to replace them.

An obvious objection to this explanation is, that at the age of six years, all the teeth, except the third and perhaps the second molars, would have become calcified, and the eruption of the permanent set would, probably, have commenced. Therefore, the disease could not have originated

in the already perfectly developed follicles near the symphysis.

In order to point out more clearly the relation of these tumours to the enamel organ, I will glance briefly at the development of that structure. About the seventh week of embryonic life an ingrowth of the epithelial lining of the gum takes place along the whole length of the jaws. The portions of this ingrowth about to form the teeth becoming enlarged into downward projecting papillæ consisting of small round epithelial cells surrounded by a layer of elongated cells, which are continuous with those forming the deep stratum of the epithelium. These ingrowths of epithelium constitute the primary enamel organ. Into their apices or lowest portions a papilla of gelatinous connective tissue projects, by which the enamel-organ is invaginated, so as to become converted into the enamel-cap. This projection of connective tissue constitutes the tooth-papilla upon the surface of which the dentine is formed. The cells composing the enamel-organ, now the enamel cap, undergo various modifications. Those forming the inner layer—that nearest the tooth-papilla—become elongated and beautifully columnar; and from them the enamel-fibres are formed. The other cells remain for a time polyhedral, but subsequently the middle layer is converted into a gelatinous tissue, composed apparently of stellate anastomosing cells, with a clear soft intermediary substance. This layer is finally absorbed, and the external or superficial layer of cells forms the cuticle of the enamel (Klein, Waldeyer).

The resemblance between the tumours and the rudimentary enamel organ is at once apparent. The tumour consists of columns and alveoli lined with columnar epithelium, resembling that of the inner layer of cells of the enamel-organ, and inclosing a gelatinous tissue with the appearance of a network of stellate cells, which is comparable to the gelatinous tissue in the centre of the enamel-organ.

There now remains to be considered, first, the relation which the tumours described by Falkson and Bryk bear to those of which I have just given the details; and, secondly, the origin of the disease. I am disinclined to believe that any really generic difference exists between these tumours; for those which most nearly resembled the rudimentary enamel-organ presented the ordinary clinical and naked eye characters of the multilocular cystic tumours first described. If the most highly developed and the most elemental types were taken alone, without regard to the structure of other tumours, it might be believed that they differed in nearly the same degree as an adenoma differs from a cancer. But

among the twelve tumours examined, I have observed some which lie in an intermediate position between these two extremes. As already mentioned, in some the cell-columns or alveoli were bounded, as in Falkson's and Bryk's specimens, by a single row of elongated or imperfectly columnar cells while the central cells had undergone degeneration. In parts of others (No. 2198), the cells in the centre of alveoli presented the appearance of a network of anastomosing cells although the microscopic characters of the greater part of the tumour more nearly agreed with those of the growth first described.

For these reasons, I think that all the tumours belong to the same group, the individual specimens presenting only differences in degree of development.

As regards the mode of degeneration leading to the appearance of a network within the alveoli, it could be distinctly observed in the tumour first described and in several others, that colloid material collected within the substance of the cells, pushing the nuclei to one side, and giving rise to the form known as the signet-ring cell; by the approximation of the compressed walls of such degenerated cells, the appearance of a network was produced, with the nuclei at the points of contact. This is, I believe, the explanation of the formation of an apparent network in all the tumour formations.

(To be continued.)

ANNOTATIONS ON ANÆSTHETICS.*

By SAMUEL OSBORN, F.R.C.S.,

ANÆSTHETIST TO ST. THOMAS'S HOSPITAL.

(Continued from page 77.)

Lastly, one word of advice, and that is, *never keep a patient under the influence of any anæsthetic longer than is absolutely necessary.* The operator not unfrequently continues his demonstration after the patient is fully under the influence of the anæsthetic and ready for operation, or, led away by the interest of his case, or the remarks of bystanders, enters into a

* Reprinted from pamphlet, with author's notes of experience to present date added.

dissertation in the middle of the operation, or before it is thoroughly completed.

With reference to the treatment of patients after the administration of anæsthetics, no food should be given for the first twelve or fourteen hours after the operation, but soda-water and milk, or other cold or iced drinks may be taken. Patients should not be roused but allowed to gradually sleep off the effects of the anæsthetic, a current of fresh air being allowed to freely circulate through the room.

A previous successful administration of any anæsthetic should not be taken as a criterion to its safety on a future occasion. For although a previous administration may be a proof of the patient taking any anæsthetic badly, the converse does not hold good, and a patient having previously taken anæsthetics well may, as the result of a protracted illness, take the same very badly on another occasion. Valvular disease of the heart, shown by cardiac murmurs, need be no hindrance to the administration of ether, a fatty heart which is not diagnosable by any auscultatory signs being the form of heart disease which is the most dangerous.

Feebleness of pulse, also, should not deter one from the administration of ether, for although a very small amount of ether will be required to produce insensibility, the pulse will, under its influence, generally improve, and should it not do so, the patient may with care be carried through the operation. This was noticeably the case in a patient almost moribund operated upon by Mr. Francis Mason for ovariectomy.

In giving anæsthetics for cases operated upon with the aid of Esmarch's bandage it will never be found necessary to produce very intense anæsthesia, not even that amounting to insensibility of conjunctival surface, for the constriction by the tourniquet so deadens the limb that sensibility is blunted. Also in patients suffering from shock the amount of anæsthetic required is less in amount than in ordinary cases, on account of the nervous sensibility being already partially paralysed.

The administration of anæsthetics for eye operations is more dangerous than that for other operations, the reason being that very deep anæsthesia has to be produced before the conjunctivæ will remain insensible throughout the whole of the operation. In the removal of cataract, where coughing or struggling at the critical moment of extraction of the lens may spoil the whole operation, it is better to give ether first, and subsequently follow it up with chloroform.

The question whether anæsthetics should be given at all

in eye operations is a debatable one, the vomiting from chloroform and the vascular turgescence from ether being the objections to their use. I consider that anæsthetics are always necessary for ophthalmic operations upon children, but never for adults, except in cases of enucleation and for operations upon the eyelids.

In the reduction of dislocations the administration of chloroform is always required. Ether may be primarily given, and subsequently chloroform, but the former alone does not produce a sufficiently prolonged paralysis of the muscular system for the accomplishment of the reduction.

The administration of anæsthetics for cases to be operated upon for the cure of cleft palate are always troublesome, and it is usually found that chloroform for these cases is best. Ether causes not only an increased secretion of saliva, but also increased vascularity, and the mouth being wide open, patients return to consciousness sooner than when chloroform is given. Another difficulty in these cases is the insertion of the mouth-gag; the breathing on its insertion becomes immediately impeded by the tongue being thrown backwards at the same time as the lower jaw is depressed. A good mouth-gag is much wanted, its requirements being to keep the mouth open, to draw the tongue forwards, and to push the lower jaw forwards. The one that most fully meets these requirements is described in the 'London Medical Record' (April 15th, 1881).

The use of chloroform is necessary for all operations upon the interior of the mouth (removal of tongue, &c.), for the same reasons as mentioned when speaking of cleft palate. When the mouth has to be kept open for some time, I frequently use Clover's chloroform bellows, manufactured by Messrs. Coxeter & Son, whereby a mixture of chloroform and air is blown down the back of the throat.

Shock may kill a patient whilst under the influence of an anæsthetic, death resulting, not from the effects of the anæsthetic, but solely from shock. For cases of sudden death have occurred on the operating table prior to the administration of any anæsthetic, and to which the fatal termination would have been attributed had any anæsthetic been given. A lowering of the pulse has been said to follow excision of the testicle; I have never experienced such a result, although I believe it to be quite possible in some constitutions, the more highly cultivated being the more sensitive. In more serious operations, such as the removal of a limb, &c., I have undoubtedly noticed an alteration in the pulse, and from the lowering of the pulse on the one hand, to a fatal syncope on the other, is only a question of degree. Shock was well

exemplified in a case of amputation at the hip-joint operated upon under ether by Mr. Croft. In this case the pulse stopped immediately the pressure was taken off the abdominal aorta, and not when the limb was amputated. The remaining leg was immediately bandaged and the head being lowered the heart again recommenced its action.

Some peculiarities occasionally occur during the administration which are interesting and should be known to the administrator. The inhalation of ether frequently produces exanthematous patches on the face and upper parts of the body, and I have known a case to be removed from the operating table under the impression that the patient was suffering from one of the eruptive fevers and unfit for operation. The origin of this phenomenon is to be found in paralysis of the vaso-motor nerves by the anæsthetic. I should mention also that if any skin eruption is present it is made by the same cause more prominent.

(To be continued.)

NITROUS OXIDE, AS A GAS, A LIQUID, AND A SOLID, AND HOW OBTAINED.

By J. H. PARKINSON, L.D.S. Glas.

(Concluded from page 131.)

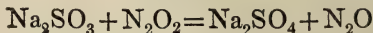
Notwithstanding many remarkable experiments by Davy, in which the great value of this gas was fully demonstrated, no less than forty-four years elapsed before it was brought into actual practical use. On the 11th of December, 1844, Mr. Wells, Surgeon Dentist, of Hartford, Connecticut, United States, inhaled the gas to which his attention had been drawn by a lecture delivered by a Mr. Colton, while another Dentist, Dr. Rigg extracted one of his teeth, without his feeling any pain; on his recovery Mr. Wells exclaimed "*a new era in tooth-drawing.*" Shortly afterwards the new agent was employed in thirteen or fourteen cases in Hartford, and was found useful even in larger operations, as Dr. Bigelow removed a female's breast on April 26th, 1848, this inhalation lasted six minutes and was perfectly successful; and Dr. Barnes kept a patient ten minutes under its influence without any unpleasant symptoms of any kind following its

use. He also mentions two cases where the operation lasted an hour and a half. The discovery of the more powerful anæsthetics, ether and chloroform, was about the same time. Ether was first administered as an anæsthetic by Messrs. Jackson and Morton at Boston, United States in 1846, and chloroform by Sir Jas. Simpson, of Edinburgh in 1848. These appear by their greater brilliancy to have overshadowed, as it were, the more modest luminary. From that time forward, however, the use of nitrous oxide, in minor operations has been steadily increasing, (one Dentist, Dr. Colton, of America and Paris, having registered its employment, in his own individual practice, in not less than 27,000 cases), and has probably only been prevented from becoming absolutely universal by the existence of certain inconveniences suggested above. To which might be added the high price at which it was supplied in the liquid state.

To forward the interest of painless operations and to show how some of the difficulties of administering nitrous oxide may be overcome is the object of this brief essay.

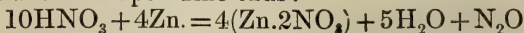
It may, perhaps, be the best, to show what those difficulties really are, first in connection with the gas and its manufacture, and secondly, in its administration and the failures attending it.

First then, treating of the gas and its manufacture; there are several methods by which the gas may be made. The earliest is the reaction by which, as adverted to above, it was discovered by Priestly in 1776, or as some authors have it 1772, viz. the deoxidising action of potassium, sulphide or sulphurous acid upon nitric oxide. This action may be represented by the following chemical equation which supposes the use of sodic sulphite, the other agents acting similarly

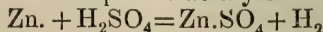


Here the deoxidising substance takes up an equivalent of oxygen from two equivalents of NO reducing it to N_2O .

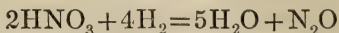
Another method that may be employed is the action of dilute nitric acid upon zinc thus:



A similar reaction is that of a mixture of dilute sulphuric acid and nitric acid upon zinc which may be represented thus: first the dilute sulphuric acid yields hydrogen,

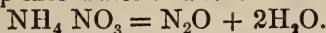


and the hydrogen set free instead of being liberated reduces the nitric acid,

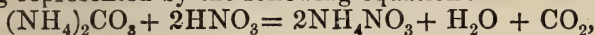


None of these methods, however, yield the gas in a pure condition, it being always contaminated with nitric oxide,

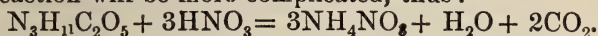
and by the last two methods with traces of arsenic from the zinc. The only way to obtain it in a reasonable degree of purity, and the method now always adopted, is to heat ammonium nitrate, which at the right temperature completely breaks up into water and nitrous oxide thus:



The ammonium nitrate is obtained by saturating or neutralising ammonium carbonate with nitric acid, the reaction being represented by the following equation:



water and carbonic anhydride being given off and ammonium nitrate formed. If, however, the commercial carbonate (sesquicarbonate of ammonia) be used, the composition of which is stated (Roscoe and Schorlemmer, p. 181) to be $\text{N}_3\text{H}_{11}\text{C}_2\text{O}_5$, the reaction will be more complicated, thus:



In this case one pound of carbonate of ammonia would yield 1.53 pounds of the ammonium nitrate, and would require about 1.2 pounds of nitric acid (the strongest).

Great care must be taken that the ammonium carbonate and the nitric acid are free from chlorides and sulphates, as these would introduce impurities into the ammonium nitrate which would seriously deteriorate the resulting gas. The ammonium nitrate when heated is resolved, as seen above, entirely into nitrous oxide gas and water, provided the material be pure and the heat properly regulated. Any chlorides or sulphates in the ammonium nitrate cause serious impurities in the nitrous oxide, viz. chlorine and nitric oxide, both of which are extremely deleterious to inhale, and even with the greatest care to secure purity of the original materials the gas requires careful treatment to remove traces of these two gases, which will generally make their appearance in spite of all precautions. The heat also requires most careful regulation; at a temperature between 340°F . and 480°F . pure N_2O gas is given off, above the latter temperature impurities begin to make their appearance, whilst at 600°F . nitrous acid, nitrous oxide, and even ammonium nitrate, water, and nitrogen are the products. This regulation of the heat is one of the principal difficulties of making the gas on the small scale. In making the gas this way a thermometer should be inserted in the flask and closely watched, or if the temperature be not regulated, *especially* when making the gas on the large scale and for condensation, and it should happen to rise too high, the resulting gas would be found *quite incondensable* and would have to be all wasted and the batch thrown away.

Coming back to the equation of ammonium nitrate, we

find that 80 yields 44 of nitrous oxide and 36 of water, or, making use of more familiar words, one ounce of ammonium nitrate yields 240 grains of nitrous oxide; as a gallon of nitrous oxide at freezing temperature (32° F.) weighs 138 grains it follows that one ounce yields a little short of two gallons, and since at ordinary temperature the gas will be somewhat lighter it is usually taken that one ounce produces two gallons, so that the 24 ounces of ammonium nitrate (1.53 lbs.), seen by the previous equation to be produced from one pound of commercial carbonate, ought to produce at the standard temperature (32° F.) about 42 gallons of gas, or 48 gallons at ordinary temperature. In practice two pounds of ammonium nitrate yield 50 gallons of gas, of course there is some waste in making, purifying, and bottling, but it, however, can be made and sold at a reasonable profit at six shillings the fifty gallons.

ON LONGEVITY.

By FELIX WEISS, L.D.S. Eng.

It would appear from some remarks which have lately been published in the 'Morning Post' that medical men are just arriving at the conclusion that most people do not die of old age; in other words, that the majority go before their time simply because they contract bad habits, they live in a bad climate, or they eat unwholesome food. From some calculations here given, and to which I shall presently allude, it would appear that longevity is increasing rather than diminishing. The animal in a natural state is said to live five times its maturity, and if human beings are to follow the same rule, man not being fully developed until his twenty-fifth year, he should live to the venerable age of 125 if he fully carries out the rules of health, which rules, it may be observed, are not carried out in our present life. To begin with, the marriages of immature women is one source of weakness, and in a book called 'Lectures on the Laws of Life,' Dr. Elizabeth Blackwell thus writes of marriages in America:—"A young lady is thought to be getting rather old at twenty, but at twenty-five she is already an old maid; and yet as a general rule before the age of twenty-five she is not prepared to enter on the marriage relation. It is only

from twenty to twenty-five that the body attains its full vigour, that every part, having acquired its due solidity, becomes capable of employing all its functions without injury to the individual and with full benefit to society."

The same author, in writing about the opposite sex, very sensibly remarks:—"Boys are entered for professions, their half-formed brains crammed with knowledge they are unable to retain, and their physical powers often strained beyond what they will bear. And for what? For the sake of gaining a few years in one part of their lives (to lose them in another), which would be better spent in perfecting physical development and allowing the brain time for healthy growth. The young mind has to apply itself during the limited term of school study to such a list of subjects as the following:—Grammar, ancient and modern history, natural philosophy, chemistry, botany, astronomy, mental and moral philosophy, physiology, rhetoric, composition, elocution, logic, algebra, geometry, *belles lettres*."

All this is doubtless very true, but it must not be forgotten that there is a great difference in the development of different individuals, and what one might do with impunity would be dangerous in another. Slow development in most cases is better than forced or early ripeness, and if we look at the lives of some of our greatest authors we shall find that those who commenced late in life may continue full of original thought to advanced years. Take Sir Walter Scott for instance, who wrote the whole of his Waverley novels after the age of fifty, and Goethe, who commenced the grandest of all his dramas, "Faust," at the age of fifty-three. Mentally and physically there is the greater chance of a long, healthy, and useful life by the slow development of our faculties, and men who have not been distinguished in their youth for any large amount of culture will bear the wear and tear of ordinary existence the best.

In adult life most people eat and drink too much, and more people die from over- than under-feeding, particularly among the middle and the higher classes. The favorable reports given of late years on longevity may be attributed in some measure to the disuse of stimulants or, indeed, to that moderation which is now beginning to permeate all classes of society.

During the year 1882 the obituary column of the 'Morning Post' recorded the deaths of 9237 persons, of which 1117 were eighty years of age and upwards. The summary runs thus:

1 had attained the age of 101 years.

2 " " 100 "

1 had attended the age of 100 years all but ten days.				
4	”	”	99	”
2	”	”	98	”
7	”	”	97	”
7	”	”	96	”
12	”	”	95	”
16	”	”	94	”
20	”	”	93	”
31	”	”	92	”
13	”	”	91	”
25	”	”	90	”
51	”	”	89	”
50	”	”	88	”
62	”	”	87	”
82	”	”	86	”
102	”	”	85	”
103	”	”	84	”
111	”	”	83	”
137	”	”	82	”
146	”	”	81	”
132	”	”	80	”

1117 Total.

When we consider that these records are taken from the middle and the higher classes, not by any means the longest livers, the report must be considered satisfactory. We all know that science has made great strides, and medical science particularly, during the past twenty-five years, and kindred sciences have contributed in no small degree to make our lives longer and, we trust, happier. It is not too much to say that the operations of the Dentist have added to the duration of our days, for independent of the advantages resulting from the wearing of artificial teeth, all the operations of the mouth are calculated to improve mastication, and thus bring about the better assimilation of our food. Our hospitals have added materially in bringing about these results, for the very extraction of diseased teeth (now so little dreaded, thanks to our anæsthetics) must of itself be a great boon to suffering humanity, and it is, I believe, more the exception than the rule to find a really unhealthy mouth even among the poor.

British Journal of Dental Science.

LONDON, FEBRUARY 15, 1883.

IN our issue of January 1st we commented upon the letter sent to the members of the British Dental Association in which the scheme for the Dental Benevolent Fund was given, and we now hear that a most encouraging response has been made to the appeal for the money necessary for its establishment. It was pointed out that to make the Fund worthy of support that some guarantee should be given that the *most necessitous* should receive the first benefits, not as was stated in the letter referred to, that the members of the British Dental Association should have the preference; for with such an exclusive right of selection all persons not members of the Association will naturally decline to contribute. In justice to the promoters of the scheme we must not omit the remark which appeared in the letter, that "in the event of the Representative Board receiving sufficient encouragement from the members of the Association to justify the necessary expenditure, a provisional code of laws will be drawn up," and we cannot think that the rules which have so satisfactorily governed the Medical Benevolent Fund will be altogether ignored. In one it appears that although it is not necessary that applicants or their representatives in the profession should have been subscribers, but this is always looked upon as a strong additional recommendation.

We have pointed out that the British Dental Association is founded to look after the interests of the profession as a whole, so that it is not unreasonable that that body should desire to undertake the management of so important a business as the Benevolent Fund. To obviate the chance of any action being taken unfavorable to the major part of the

profession we have repeatedly urged that all should join so as to exercise their power of controlling its movements.

As it is highly probable that within the next few months a draft of the rules will be drawn up we cannot impress too forcibly on the minds of the members of the British Dental Association the necessity of closely watching the probable effect of the scheme proposed, and voting for the rules that will, by their liberality, gain the confidence of the whole profession; that the Fund will be administered with judgment as well as generosity, so that practitioners as well as others, whether members of the Association or not, whether agreeing with its objects and proceedings or not, may yet unhesitatingly meet on the neutral ground of charity, and freely subscribe for the succour of those overtaken by unforeseen and unmerited affliction or trouble.

To return to the Benevolent Fund, two things are essential, first, that donations should be made to establish a capital from which a guaranteed income would be derived, and, secondly, that a long subscription list be obtained. With both, the Council will be in a position to give assistance without stint.

To those who are more likely to become recipients from the Fund we would ask their immediate support. Failing health is a sure forecast, and where can there be found greater comfort than in the reflection that every effort has been made to provide for the little ones who may at an early period be deprived of the bread winner either by affliction or death. The sooner a large sum is collected the sooner the work of relief will be commenced, the usefulness of the Fund is, therefore, in our hands. Our appeal is not a selfish one, it is for the sickly and distressed, that we commend our remarks to the serious consideration of our readers.

Manipulative Miscellany.

All instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month, they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits, and without any intention or wish to pit one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

THE DIBBLE PLUGGER.

It would be difficult to conceive a more simple method for the construction of an automatic plugger than that employed in the one under notice by Mr. Rutterford. Its usefulness is so apparent that we cannot refrain from saying a good word about it. It consists of an india-rubber egg-shaped bulb, to which is attached two yards of india-rubber tubing, which is again joined to the mallet. By this it will be seen that it has pneumatic action. The mallet is an half-inch diameter nickel-plated tube four inches long, into which is fitted a loaded steel piston, which acts with great accuracy. Screwed on to the tube is the plugger holder, the only apparatus being a slight spring movement which prevents the hand being jarred when the blow is dealt. Apart from the fact that there are about four feet of tubing hanging from it, it is nearly one ounce lighter than the well-known Snow-and-Lewis mallet. To bring it into use all that is to be done is to throw the bulb on the ground, screw in the shaped plugger required, place the heel of the right foot on the ground, press the sole of the foot on the bulb, which will immediately send the loaded piston against the plugger in exact accordance to the pressure exerted on the bulb. One of extreme lightness or weight can be obtained at will, and a varying stroke may be had by reversing the piston, one end of which strikes with lead and the other soft vulcanized rubber.

There is nothing beyond the india rubber perishing that

can possibly get out of order, so it should become a great favourite in the profession.

A NEW IMPRESSION TRAY.

AT the time of our description of the new Impression Tray which appeared in our last issue we were not furnished with the name of Mr. Penny as the inventor.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

ORDINARY MEETING, HELD MONDAY, FEBRUARY 5TH, 1883.

JOSEPH WALKER, M.D., President, in the Chair.

THE minutes of the previous meeting having been read and confirmed the President called upon several members for their casual communications.

Mr. REDMOND showed a supplemental deciduous lateral incisor, also a lower molar in which the dental pulp had become almost entirely calcified.

Mr. STEVENSON exhibited his incandescent electric lamp, rendered suitable for Dental operations. He explained that the power was obtained from a four-celled bichromate battery, which maintained its strength for a considerable time, and by means of a practical demonstration after the meeting, a most interesting half hour was spent in it being shown to what use it could be put.

Mr. COLEMAN then passed round an odontome coronaire (Broca), the property of Mr. Reed of the National Dental Hospital.

Mr. WALLIS showed an automatic hammer for riveting the pins of flat teeth, also a very simple and portable electric lamp similar to that of Mr. Stevenson's.

The time allowed for casual communications having expired, the President proceeded to read his inaugural address, which we shall have the pleasure of reproducing in our next issue. Following this, was the opening of the discussion on the "Theory of Caries" by Mr. HENRY SEWELL,

who said: "He was not prepared to tell them anything new, but as two physicians had within the last few months read papers before the Society on the "Constitutional Causes of Dental Caries," and had given their views, which would lead the profession to believe that constitutional disturbance was the sole factor in the production of dental caries, he thought that the time of the Society would not be wasted in allowing him to go over all that was known on the subject, and endeavour to obtain, as a result of the discussion, the true causes of dental caries. After some preliminary remarks he said that one thing was certain, that dental caries was simply a molecular disintegration of the tooth structures by an acid, and that by careful comparison the phenomena of caries were identical in both dead and living teeth, showing that no vital force was present. The transparent zone which by some is considered to be an attempt of nature to arrest the disease, is found in both specimens. He could not believe there was ever any inflammatory process going on in a dense structure like dentine, although, according to the recent explanation by Dr. Burden Sander-son, of the term *inflammation*—referring to the lectures before the Royal College of Physicians in March, 1882, and published in the 'Lancet' in the three numbers of April of that year—the process was described as being carried on as in the cornea without vascular disturbance, and this view if analogous could not be maintained. That caries was essentially a disease which obtained its origin from without was fully supported by the discoveries and observations of Tomes, Wedl, and others. It was a physical and not a vital process. How much syphilis and scrofula had to do with the ill-developed dental structures he was not prepared to say. That if a perfectly calcified enamel would form a centre for caries was the experience of all, it created a cell for the lodgment of fermentive matter, and with the addition of microzymes, the process of caries was actively carried on. He hoped he had said enough to solicit the opinions of others, which he begged they would do freely, as the subject was one of the greatest importance.

Mr. COLEMAN, who continued, said that, whilst agreeing with a great deal what Mr. Sewell had said, he was of the opinion that acidity was not such an indispensable medium in the production of dental caries, and he could quote instances where the disease existed in every imaginable locality and yet he could not obtain a greater acid reaction than in cases where there was an almost total absence of caries. He noticed that Mr. Sewell had not touched upon the prevalence of caries in cementum. It was proved that

in this case it was identical with caries of ordinary bone, the same processes being followed out. Where we had a large surface of cementum exposed it was difficult to explain how that in many instances the disease commenced at a certain centre whereas the whole surface was exposed to the secretions of the mouth. It stood out in opposition to where an abrasion was discovered in the enamel, and from this point the destruction of the dentine commenced.

Upon a proposal from the President to prolong the meeting being negatived he declared the discussion adjourned until Monday, March 5th, when Dr. Thorogood will read a paper upon the "Therapeutic Action of some Drugs employed in our speciality."

Literary Notices and Selections.

THE MEDICAL DIGEST.*

THE second edition of Dr. Neale's excellent work appeared a few months ago, and is being fast taken up, a fact not to be wondered at, considering the immense assistance it is to those who wish to obtain all that has been written on medical and surgical cases within the years 1837 and 1881.

In its original form it appeared as one of the New Sydenham Society's volumes for the year 1877. This edition exceeds the original by 20,000 additional references to the works published during the last five years. This work, therefore, while not claiming to be a complete index of medical literature, professes to be, and apparently is, a digest of all the medical journals, both home and foreign.

It is gratifying to find most Dental cases noticed which the following will illustrate. Under the heading of Foreign Bodies in the Stomach we find Mr. Harding's case and those narrated by Mr. Felix Weiss; also Mr. Harding's case of the Destruction of the Dental Nerve by Arsenic. Under Dental Caries that of Tomes and Salter; Ancient Teeth, by Mummery; Honeycombed Teeth, by Moon; Sensitive Dentine, by Bartlett; Carbolic Acid, by Woodhouse; Alveolar Abscess treated Antiseptically, by Underwood;

* 'The Medical Digest.' By Richard Neale, M.D. Lond. London: Ledger, Smith, and Co., St. Mary Axe.

and Fractured Jaws, by Hammond. These have been found in a casual glance through the work, and by no means indicates all that has been noted.

To those who have not studied the book, its arrangement would at first sight appear complicated, owing to the number of abbreviations used, but these difficulties are soon overcome by carefully reading through the preface and working out one or two examples.

The work contains 642 pages with an additional index of 80 pages, which materially assists the reader in finding what he requires. It is well printed in clear large type and handsomely bound, and furnishes the literary man who is desirous of obtaining, in a few minutes, the names of those who have written on any medical subject, with the titles of the papers and date of publication. It would be impossible to give a full description of its arrangements in the limited space at our command, so we can only bring it under the notice of our readers, with the hope that those who are in want of such a valuable book of reference will obtain a copy.

ABSTRACT OF A CLINICAL LECTURE ON EPITHELIOMA OF THE ANTRUM.

By M. TRÉLAT, of the Hôpital Necker.

WE have to operate upon a patient aged sixty-two, who entered our wards seventeen days ago, for an affection the diagnosis of which was not easy to establish.

This woman is pretty strong and hearty, and has usually enjoyed good health. She tells us that in June of last year she noticed a slight swelling of the left cheek, mostly below the eye, accompanied with some redness and slight pain. These phenomena, she states, lasted for about four months, and disappeared under the use of poultices.

There was but little change in her condition till the beginning of March, when the cheek began to swell again in the same region. Her sight was somewhat interfered with by the swelling, but she suffered but little pain.

On the 11th of this month she was admitted to my wards. She was then carefully examined, and two opinions were at once started as to the nature of the affection. Some thought the tumefaction due to periostitis of the anterior wall of the antrum, others to some new growth.

If the case were really one of periostitis it would be the sequel to some injury or some dental affection. But this woman is sixty-two years old, has usually been in good health, and this tumour does not occupy the usual seat of dental periostitis, for it is in the infra-orbital region. Might it not rather be an epithelioma, as in the patient for whom I was obliged, last January, to remove the whole of the antrum, and also the globe of the eye, as the tumour extended into the orbital cavity? This patient, I may say by the way, is not only perfectly well now, but has grown very much stouter.

This case reminds me also of a young boy I treated twice. The first time at the Pitié, twelve years ago—he was about eight or nine at the time—and the second at the Charité five or six years afterwards. A twelvemonth before he came to the Pitié he had a violent contusion on the right temple, which had gradually led to the formation of a hard, deep, immovable swelling beneath the muscle, and over which the skin was quite unaltered. This swelling was nothing but a subperiosteal abscess, which I opened and drained. It healed very quickly and well.

Nevertheless, a new swelling formed in the same position five or six years afterwards. It was incised again, but this time the cure was permanent.

But in the patient, who is the subject of this lecture, the skin is what I should call of an angiectasis not an inflammatory redness; it is tense, and distended by the underlying tumour. There is no fluctuation. In the neighbourhood of the lower lid the skin is œdematous and deeply mottled; it is in parts adherent to the tumour, which seems to affect also the deep-lying structures.

The position of the eyeball does not appear to be altered, but the lower lid is so pushed upwards that it almost meets the upper one. The sight is not affected. A phenomenon which prompts us to interfere without loss of time is the rapid increase in the pains. One fortunate circumstance for the patient, but slightly, only slightly, interfering with the diagnosis, is the absence of any glandular enlargement, either close to or at a distance from the swelling.

A week ago M. Campenon, my *chef de clinique*, made a small exploratory puncture, which gave issue to some blood but no pus. A small fistula has formed along the track of the exploratory needle, from it exudes some transparent mucus, but no trace of pus.

This morning I passed a probe into the fistula to a depth of over two inches (five centimètres) in every direction. By this we see that the anterior wall of the antrum is destroyed

and is replaced by soft tissues, through which the probe passes easily. We have, therefore, to deal with an epithelioma, and neither the skin nor the mucous membrane of the nose are affected; the tumour must originate from the antrum itself and have destroyed its bony walls.

This case has not run a very rapid course, like in the patient I operated on in town three weeks ago, and who is now moribund. The disease first appeared towards the end of last December. It showed itself as a small tumour on the lower lip, which his medical attendants took for a chancre, and for which he underwent specific treatment. When I was called upon to operate at the beginning of this month there was already a considerable enlargement of the glands. That shows you what a rapid course these cases may run, for in less than four months the patient will have succumbed. Fortunately this rapidity is unusual.

In our patient the relief which she felt last October is no doubt to be attributed to the opening of the antrum, and the violent pains she complains of now to the implication of the infra-orbital nerve.

The tumour appears to me to be an epithelioma starting from the left antrum; its seat, its nature, and the pain it causes seems to me to call for a prompt removal. The tumour evidently spreads very deeply, but how far it is impossible to tell; the loss of substance will undoubtedly be a very large one.

The operation was performed at the close of the lecture, and fully confirmed Professor Trélat's diagnosis of epithelioma of the sinus maxillaris. The new growth extended very far back, and pushed up the eyeball. The operation was a very tedious one, and included the resection of part of the orbital border of the superior maxilla. Very little blood was lost.—*Gazette des Hôpitaux*.

CHANCER ON THE CHEEK.

MR. PEARCE GOULD showed a man at the Medical Society with a Hunterian chancre on his cheek. The patient, a young married man, came to the Westminster Hospital ten days previously. The chancre was as large as a halfpenny piece, defined and moderately indurated, with an abraded surface. There was one enlarged gland over the parotid gland and several below the jaw. There was also an abundant roseo-

lous rash over the trunk, and very slight sore throat. The chancre had been noticed altogether two months, and was now rapidly improving under mercurial treatment. The only clue to the mode of infection was the fact that he was in the habit of "larking" and taking his meals with a cousin who was suffering at the time from a severe attack of syphilis.

The PRESIDENT mentioned similar cases which he had recorded before the Society and in the 'St. Thomas's Hospital Reports,' and laid stress upon the necessity for accurate diagnosis, as in some cases operations had been undertaken for the removal of chancres of the lip mistaken for cancer.

Mr. ROYES BELL referred to two cases, and Mr. E. Owen to another, the latter remarking on the size and spongy character of the sore in Mr. Gould's case—similar to the chancres that sometimes occur on the fingers of medical men.

The PRESIDENT remarked upon the comparative rarity with which medical men were inoculated, seeing the risk they constantly ran in examining cases of syphilis.

Mr. GOULD, in reply, said he had seen a similar sore over the malar bone of a young girl, communicated by a kiss from an infected person, also another in a girl six years of age. He related a case which he saw last week, where there appeared conclusive evidence of indirect inoculation through a w.c.

A FISH-HOOK IN THE ŒSOPHAGUS; EXTRACTION; RECOVERY.

F. P—, aged ten, of Great Brickhill, Beds, whilst engaged in fishing held in his mouth a fish-hook attached to a piece of gut and accidentally swallowed it. He was admitted to the Bedford General Infirmary, eleven hours after the accident, under the care of Dr. Goldsmith.

The only subjective symptom on admission was pain over the episternal notch. Half an inch of gut was seen protruding from his mouth, and on following the gut backwards with the finger, the notion conveyed to the touch was that the hook lay somewhere in the windpipe, but the boy had no cough, no dyspnœa, and his voice was perfectly clear. On applying gentle traction to the extremity of the gut, great resistance was felt. This was consequently discontinued and chloroform administered. A piece of silk ligature was tied to the end of the gut, and to the extremity of the silk a

fine wire was attached. A traveller fourteen inches long was then passed along the twisted chain of iron wire, silk, and, lastly gut, down the œsophagus. It, however, proved to be too short to reach the hook; it was therefore withdrawn and a full-sized œsophageal bougie substituted for it. This passed with perfect ease until it reached the bend of the hook; here slight resistance was felt, which was easily overcome by pressure. During this part of the operation the bougie touched the cardiac end of the stomach and vomiting was induced, although the insensibility was nearly complete. The bougie was kept in position and the wire tightened; both bougie and hook fixed at its extremity were carefully withdrawn without any further trouble. The hook proved to be a No. 6 perch, and the gut was nine inches and a half long.—*Lancet*.

A. SICHA confirms Fabini's assertion that the liability of phenol to turn pink arises from the presence of copper. Phenol, which he prepared by distilling entirely from glass vessels, remained white for months in the sunlight; but when to fifty grammes of this phenol, ten drops of a solution of copper sulphate (0.10:40 H₂O) were added, the pink colour was formed after six days, and in two months became very intense.—*Casop. Cesk. Lekaon*, 1, 49-50, *Mai*, in *Journ. Soc. Chemical Industry*.

MR. S. J. HUTCHINSON showed a model before the Odontological Society of Great Britain of the mouth of the girl now being exhibited at the Westminster Aquarium as "The Missing Link." She was said to be "about seven years old," and if judged by her appearance and remarkable intelligence would be thought to be considerably older; but an examination of her mouth showed that she had not yet cut her six-year-old molars. The four upper temporary incisors were decayed, and the permanent centrals were just coming through behind them; the six-year-old molars in the lower jaw were apparently on the point of eruption. The child was remarkably hairy, her arms and legs were covered with fine silky hair, at least an inch and a half long, whilst her forehead down to the eyebrows presented a thick crop of short bristly black hair. She was said to possess a rudimentary tail, but this he (Mr. Hutchinson) did not specially investigate. As he had already stated, she was very intelligent, and it was a remarkable fact that the measurement

across the top of her head from one ear to the other was about three inches more than the average of English children of the same age. Dr. Carpenter, in the paper he had lately read before the Society, quoted Darwin's theory that there was a correlation between the growth of the hair and of the teeth—that when the one was in excess the other was deficient. This assumption was founded on the case of the Kostroma people, who were hairy and almost edentulous; but the present case did not support this theory, for, though the child was hairy, her dentition up to the present was normal. He might add that the child's father exhibited the same peculiarities, and would have been shown with her, but died whilst on his way to this country.—*Trans. Odonto. Soc.*

PENETRATING WOUND OF THE ORBIT; BULLET LODGED IN THE BRAIN.

By A. EMRYS-JONES, M.D.,

SURGEON TO THE ROYAL EYE HOSPITAL, MANCHESTER.

ON Monday, November 6th, I was summoned in a great hurry to see a case in consultation with my friend, Mr. W. Armstrong, of Harpurhey, who informed me that a boy, aged fourteen, a few hours previously had been handling a revolver, the contents of which had been discharged into the orbit, and most likely into the brain. The boy was evidently in pain, and it was deemed advisable to give him a few drops of chloroform before proceeding to make an examination; but just as he took the first few sniffs he struggled violently, and then fell into a state of collapse, and, in spite of all that could be done, he did not breathe again, although the action of the heart kept up for some time.

On November 8th we made a post-mortem examination, and found the following appearances:—The eyeball was extensively ruptured, and internally a large irregular opening, about half an inch in extent, at the junction of the ethmoid and sphenoid bones, and continuous with the opening a large hole extending through the cerebral convolutions to within an inch of the posterior boundary, where we found the bullet.

The track was filled with blood, and the *débris* of bone carried along with the bullet. There was extensive hæmor-

rhage into the adjacent parts and the ventricles. We found all the other organs healthy.—*Lancet*.

FEMALE BRAIN-WORK.

REFERRING to much that had been said and written lately about the overworking of girls and young women in schools and colleges, and that his friend, Dr. Clauston, had come forward as the champion of health and ignorance, for women Dr. Tuke thinks that Dr. Clauston had overstated the position of matters, that he had based his opinions more on the observation of isolated cases than on the general condition of highly educated women; that he had mistaken the wail of the one for the murmur of the many. No doubt a certain number of young women suffered and broke down whilst studying, but this did not necessarily imply that study was the cause of the breakdown. Idleness and ignorance were much more prolific causes of disease amongst women than overwork. They were the main producers of hysteria and all sorts of vapourish complaints, of many ills and evils, and of inanity, if not of insanity. As a matter of fact, it was not an easy thing to overtask the energies of the brain by work. It was not work, but worry, that killed the brain. The latter, he feared, must be ever with us all. The most highly-educated and hard-working women whom he had the honour of knowing were eminently healthy. Perhaps this might be the "survival of the fittest;" but, even granting that it was so, the more women worked the more fit women they would have. The breakdown from overstrain did occasionally take place, and the first really important symptom was sleeplessness; when that set in, there was cause for alarm. As soon as a child or young person developed continuous headache, work should be discontinued.—*Med. Times and Gaz.*

SWALLOWING COINS.

DURING a discussion on swallowing foreign bodies (when the general opinion seemed to be that the administration of active cathartics is unnecessary and injudicious), Dr. Bush observed that it was the custom of persons who attempted to

pass spurious coins to swallow them to avoid detection. In such cases their diet was composed of hard-boiled eggs, they having found by experience that this diet rendered the foreign body harmless by enveloping it in a coat. In about three days the coin would be found in the fæces.—*Boston Med. Journ.*

Dental News.

EASTERN COUNTIES DENTAL ASSOCIATION.

At a meeting of the Council held on Wednesday, January 24th, it was decided that the Annual General Meeting of the above Association should take place on April 11th next at Ipswich, and that for 1884 at Cambridge.

Mr. J. Fenn Cole, of Ipswich, President elect.

ASHENHURST FUND.

	£	s.	d.
Per Mr. Rutterford—			
M. B. J.	0	10	0

Further subscriptions will be received by Messrs. C. Ash and Sons, the Dental Manufacturing Company, Mr. Rutterford, Messrs. W. and J. Jamieson, and the Editor of this Journal.

VACANCIES.

UNIVERSITY COLLEGE HOSPITAL, LONDON.—Dental Surgeon and Clinical Lecturer on Dental Surgery. Applications by February 28th.

THE DENTAL HOSPITAL OF BIRMINGHAM.—Dental House Surgeon. Applications by March 12th.

APPOINTMENTS.

MR. ANDREW JAS. CRANE, L.D.S. Irel., has been appointed Honorary Dental Surgeon to the Folkestone Dispensary and Infirmary.

MR. ALFRED SMITH, L.D.S. Eng., has been appointed

Dental Surgeon to the National Dental Hospital vice Mr. Garnell Hammond resigned.

MR. WILLIAM HERN, M.R.C.S., and L.D.S. Eng., has been appointed Demonstrator of Cohesive and Contour Filling to the London Dental Hospital vice Mr. Claude Rogers resigned.

MR. JOSEPH MILLS, M.R.C.S., has been appointed Administrator of Anæsthetics to the London Dental Hospital vice Mr. J. Clover deceased.

MR. MARCUS DAVIS, L.D.S. Eng., and MR. H. G. READ, L.D.S. Eng., have been appointed Assistant Dental Surgeons to the National Dental Hospital.

MONTHLY REPORT OF CASES TREATED AT THE DENTAL HOSPITAL OF LONDON,

FROM JANUARY 1ST TO JANUARY 31ST, 1883.

Extractions	{ Children under 14	492
	{ Adults	750
	{ Under Nitrous Oxide	379
Gold Stoppings.....		176
White Foil ditto		11
Plastic ditto.....		944
Irregularities of the Teeth treated mechanically.....		109
Miscellaneous Cases.....		192
Advice Cases.....		159

Total..... 3212

W. F. CORNELIUS,
House Surgeon.

MONTHLY REPORT OF CASES TREATED AT THE NATIONAL DENTAL HOSPITAL,

FROM JANUARY 1ST TO JANUARY 31ST, 1883.

Number of Patients attended 1542

Extractions	{ Children under 14.....	354
	{ Adults.....	655
	{ Under Nitrous Oxide	165
Gold Stoppings		51
Other Stoppings		357
Advice and Scaling		163
Irregularities of the Teeth		47
Miscellaneous.....		294

Total 2086

FRED. WM. BATE,
House Surgeon.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 82, Mortimer Street, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
3. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
4. All communications relative to subscriptions and advertisements are to be addressed to the Publisher, Mr. J. P. Segg, 82, Mortimer Street, Regent Street, London, W.
5. The Journal will be supplied direct from the office on PREPAYMENT of subscriptions as under:

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ANSWERS TO CORRESPONDENTS.

“W. L.”—You had better place your name at Messrs. Ash & Sons with testimonials.

Communications have been received from Messrs. F. Bate (London), Secretary of Eastern Counties Dental Association, W. F. Cornelius (London), Dental Manufacturing Company (London), Dr. Field (London), E. Noble Smith (London), G. W. Rutterford (London), F. Henri Weiss (London), J. Williams (Walsall), A. J. Crane (Folkestone), Felix Weiss (London).

BOOKS AND PAPERS RECEIVED.

‘Pharmaceutical Journal.’ ‘Glasgow Medical Journal.’ ‘Report of Edinburgh Dental School.’ ‘Transactions of the American Dental Society.’ ‘Transactions of the Odontological Society of Great Britain.’ ‘Giornale di Correspondenza dei Dentisti.’ ‘The Kingstown Dental News.’ ‘Southern Dental Journal.’ ‘L’Art Dentaire.’ ‘Revue Odontologique.’ ‘Le Progres Dentaire.’ ‘British Medical Journal.’ ‘Lancet.’ ‘Curvatures of the Spine.’ ‘Affairs of the Dentists Act.’ ‘Dental Record.’ ‘The Alienist and Neurologist.’ ‘Cosmos.’ ‘Deutsche Monatsschrift für Zahnheilkunde.’

NOTICE.—We desire that it may be clearly understood that our pages are open to all for free expression of their views on matters connected with our profession. We only ask for terseness of expression and MODERATION IN TONE.

When otherwise unobjectionable, difference of political or other opinion will never be regarded by the Editor as a disqualification for the admission of any communication to the pages of the BRITISH JOURNAL OF DENTAL SCIENCE.

British Journal of Dental Science.

No. 363.

LONDON, MARCH 1, 1883.

VOL. XXVI.

CYSTIC TUMOURS OF THE JAWS, AND THE ETIOLOGY OF TUMOURS.*

By F. S. EVE, F.R.C.S.,

ERASMUS WILSON LECTURER AND PATHOLOGICAL CURATOR OF THE MUSEUM
OF THE COLLEGE, AND SURGICAL REGISTRAR TO
ST. BARTHOLOMEW'S HOSPITAL.

(Continued from page 172.)

I WILL now ask you, in the second place, to consider the probable mode of origin of the tumours.

After repeated examinations, I have been able to observe in several specimens appearances distinctly indicating that they originate by an ingrowth of the epithelium of the gum. Sections of a tumour of the superior maxilla showed pear-shaped ingrowths of epithelium connected with the epithelium of the gum by their narrow extremities. The cells composing them had completely undergone degeneration except at the periphery, and two similar ingrowths were continuous with the mass of the tumour. In the same sections, a prolongation downwards of the interpapillary processes of the epithelium as fine lines into the tumour was observed. Sections taken from specimens 2198 and 2203, and passing through the margins of ulcerated sockets from which the teeth had fallen out, showed, as the alveoli were approached, a gradually increasing thickening of the epithelium of the gum, and, near the margin, numerous papillary processes of epithelium passed down and became continuous with the cell-columns forming the tumour. Indications of ingrowth of epithelium near the alveoli over the tumour were also observed in other specimens. Again, Büchteman† describes a case in which he observed a similar ingrowth of epithelium which was in "unmistakable connection with the tumour-formation."

The mode of origin of the cystic tumours is therefore

* Lecture delivered at the Royal College of Surgeons of England.

† Langenbeck's 'Arch.,' vol. xxvi, p. 249, pl. iv.

analogous to that of an ordinary epithelioma. Their precise relation will be discussed further on.

Multilocular cystic tumours have frequently followed some form of injury, irritation by decayed teeth, or long continued inflammation; these may be looked upon as exciting causes by inducing an increased blood supply to the part. An epulis has, in some instances, preceded their formation. This is not surprising, as I have met with five epules from children and adults, composed largely of columns of epithelial cells.

The cystic disease is more common in early adult and middle age, but may occur at any period of life. Coote recorded a case in a child, six months old, and another in a man, aged 75. Wilks also described a case in which the disease was congenital. Of twenty-six cases in which the age was stated, twenty of the patients had reached the age of twenty years when they came under observation; and in one half of these cases the disease occurred between the ages of twenty and forty years inclusive.

The clinical characters of these tumours are almost sufficiently indicated by the descriptions of the specimens already given. They are rounded, and usually lobulated on the surface from the presence of numerous cysts. They project, as a rule, more from the external than the internal surface of the bone. At some parts of the tumour there is fluctuation, and at others the characteristic parchment-like crackling can be obtained by pressure on the thin bony covering of the cysts. Not unfrequently one or more of the teeth have fallen out from the affected portion of the jaw, and a glairy fluid has been observed by the patient to issue from the open alveoli.

On puncture, a turbid brownish serum, a sero-sanguineous or a glairy colloid fluid, may be obtained from different parts of the same tumour. If the disease involve the upper jaw, I think it could not, as a rule, be diagnosed from other solid growths in the antrum, unless the cysts were unusually large.

The tumours are slowly growing, existing sometimes* for twenty years; they have very little tendency to implicate surrounding parts, or the neighbouring lymphatic glands, and, if completely removed, rarely recur and still more rarely become disseminated throughout the system. Their comparative innocence is probably explained by the bony capsule forming their boundary, by their low degree of vascularity and by the remarkable tendency of the epithelial cells composing them to undergo degenerative changes. The

* As in Mr. Wagstaffe's case, 'Trans. Proc. Soc.,' vol. xxii, p. 249.

effect of a bony envelope in diminishing the malignancy of tumours was distinctly shown by Mr. Butlin in the case of the central tumours of bones, which were necessarily surrounded by the expanded wall of the bone in the early part of their growth.

The general impression formerly existing, that all the multilocular cystic tumours are innocent, is entirely unfounded. Recurrence has taken place in many recorded cases after the cysts have been opened and their contents sponged or imperfectly gouged out. In a case treated in this manner by Syme, recurrence took place twice. The more radical gouging operation recommended by Mr. Butcher is, he tells me, perfectly successful in his hands; "the gouging," he writes, "must be carried out fearlessly and far wide of the disease."

Recurrence sometimes takes place after complete removal of the affected portion of the jaw. Here is a portion of a recurrent growth removed by Mr. Heath twelve years after the tumour (No. 2203) already referred to. I have also examined a growth from the upper jaw, which recurred some years after the removal of a tumour from the same situation in a child. The recurrent growth in both cases possessed the usual microscopic characters of multilocular cystic tumour.

In completion of the evidence showing the truly malignant nature of *some* of the cystic tumours, I am able to quote the following case, for the notes of which I am much indebted to Mr. R. W. Parker, who also gave me microscopic sections of the morbid growths.

A rapidly growing tumour of the left side of the lower jaw was removed from a woman, aged 60, by Mr. Jonathan Hutchinson, in the London Hospital; it had been noticed only thirteen weeks. The tumour was found on section to be soft, encapsuled, and it showed points of degeneration in its centre. The patient died eight days after the operation of broncho-pneumonia. The lumbar lymphatic glands near the supra-renal capsules were infiltrated with a morbid growth, but none of the viscera were affected. In minute structure the tumour of the jaw consisted of columns of small epithelial cells undergoing degeneration at their centres; and the secondary deposit in the lumbar glands was the exact prototype of the primary growth. Here, then, was a rapidly growing tumour of the variety under consideration, the elements of which had become disseminated throughout the system.

The multilocular cystic disease, like other tumour forms, doubtless possessed a varying degree of malignancy. Ad-

vanced age probably increases their malignancy; and, I think, it will be generally found, that in proportion as the age at which the tumour appears is greater, it will more nearly approach in its minute structure the lowly modified form consisting of columns and masses of round epithelial cells, as in the specimen first described, and in Mr. Hutchinson's case, just related; in the former the patient was forty-five and in the latter sixty years of age. This form is, therefore, probably more malignant than the more highly modified type occurring at an earlier age, and observed in its highest perfection in Bryk's case. Such a distinction, if found to be true in a larger number of cases in younger subjects, will be of the greatest practical importance in treatment. For it is almost superfluous to point out that the gouging operation of Butcher would probably be effectual in the comparatively innocent tumours in young subjects; while in the malignant form, a more radical operation, such as the removal of a portion or the the whole of one side of the jaw, would be indicated.

Finally, with regard to the position which these morbid growths occupy in the general classification of tumours, we find that they originate from an epithelial surface, that they are composed entirely of epithelial cells, that in many instances they recur locally after complete removal, and occasionally they give rise to secondary deposits; such a sum of characters naturally places them among the epithelial new formations, of which they may be considered a peculiarly modified variety. I therefore propose for them the name of multilocular cystic *epithelial* tumour. A considerable difference, however, exists between them and the ordinary epithelioma, owing to the kind of metamorphosis which the cells composing the cystic tumours undergo.

The gelatinous metamorphosis met with in the epithelial cystic tumours of the jaws depends, probably, upon the special characters and inherent tendencies of that portion of the epithelium of the gum from which they originate; peculiarities leading at an early period of foetal life to the formation of the rudimentary enamel organ by an ingrowth from the epithelium, and the destruction of its central cells by a special form of degeneration. It is, therefore, not surprising that an epithelial ingrowth occurring in later life from the same structure should, after penetrating into the same locality, take on approximately somewhat the same form, and undergo the same retrogressive metamorphosis as the rudimentary enamel organ itself; but the growth, like all tumour formations, makes no attempt at the higher development of the normal structure.

Analogous peculiarities in the metamorphosis are met with in many other tumours, in accordance with the structure in which they originate. For example: in the epitheliomata of the skin, lips, and tongue, the cells forming the columns undergo the same successive changes from without inwards to the centre of the column, as do those of the skin or mucous membrane, from within outwards. The cells forming the peripheral layer of the columns resemble the elongated deep layer of cells of the epithelial surfaces; and the inner cells gradually become more flattened until they are compressed into a central cornified plug.

The cell columns constituting cancer of the breast not uncommonly undergo fatty degeneration, like those derived from the epithelium of the acini in the formation of milk.

I must not omit to mention that Magitôt, in his valuable essay (*'Sur les Kystes des Mâchoires'*), completely ignores the existence of the class of multilocular cystic tumours I have just described. He regards them as a variety of follicular or periosteal cyst, whose multilocular form has been determined by the resistance of the cancellous tissue of the bone to the growth of the tumour, leading to its division into many intercommunicating loculi. In an exhaustive table of all recorded cases of cysts of the jaws, he classes examples of multilocular cystic epithelial tumour as cysts of undetermined nature, or cysts originating beneath the periosteum of the fang. The nature of some of the specimens thus classified I have determined by microscopic examination, and have found that they are cystic epithelial tumours.

Magitôt contends that "every spontaneous cyst of the jaws is essentially and exclusively dentary." Within this definition, I cannot agree to place the multilocular cystic tumours: for, although connected, as regards their origin, with the tooth-forming property of the gum, yet there is no evidence to show that they are in any way connected with the rudiments of normal tooth-follicles.

Another form of tumour is met with in the jaw, resembling the group we have been considering in containing minute cysts, derived from cylinders and alveoli filled with epithelial cells. I know of the existence of only one example in an enormous tumour of the lower jaw, which accompanied Mr. Christopher Heath's Jacksonian Prize Essay (R.C.S. Museum, No. 2234). It is a large lobulated growth, involving the lower jaw from the left angle to the middle of the right ramus. Its section has the appearance of a fibro-sarcoma, with occasional small cysts and nodules of bone interspersed throughout it. The tumour was removed from a man aged

thirty-two years. Eleven years before presenting himself for treatment he noticed a small, hard swelling below the right canine tooth. The swelling continued of the same size for five or six years, and then began to grow rapidly after a violent blow in the face.

The bulk of the tumour presented, in its minute structure, the characters of a fibro-sarcoma, consisting of spindle-shaped and round nuclei embedded in a homogeneous or faintly fibrillar tissue. Scattered throughout it, I found masses and cylinders of epithelial cells, resembling the epithelial elements of the cystic tumours. They were composed of large irregularly-shaped or branched masses, and of small columns composed of round epithelial cells, with a layer of peripheral elongated cells. This growth may be considered to occupy much the same position relatively to the other cystic tumours of the jaw, as an adeno-sarcoma of the breast does to an adenoma or a cancer.

A multilocular cystic tumour of the jaw may recur as a sarcoma, as is shown in a specimen (No. 2204) presented by Mr. Heath; it consists for the most part of round-cells, but some epithelial columns were found at its upper part.

Dentary cysts.—The other varieties of cysts met with in the jaws are immediately connected with the teeth.

They admit of division into two distinct classes:—1. Cysts originating in connection with tooth-follicles, and called follicular; or, if they contain a tooth, dentigerous cysts. 2. Cysts originating beneath the periosteum of the fang, and hence called periosteal cysts. The follicular or dentigerous cysts originate in connection with teeth, which from displacement, or some other cause, have not been “cut,” and have set up irritation. The tooth may have been placed too deeply, or in an oblique position, or its fang may have been undeveloped. In some instances it has been found inverted.

Dentigerous, or, as Magitôt calls them, follicular cysts, may be situated at any part of the jaws. When occupying the lower jaw they usually expand the external surface more than the internal, the tumour presenting itself as a rounded projection; but sometimes, as in specimen (No. 2195) in the College Museum, the walls of the bone are equally expanded. If the cyst arise in connection with the wisdom tooth, it may expand the ascending ramus.

In the upper jaw, dentigerous cysts have been observed occupying the antrum, the canine fossa, the orbital border, and even the hard palate. Mr. Cartwright describes a specimen in which the cyst occupied the antrum. Its wall, that is, the tooth-sac, was calcified but was not united to the

walls of the antrum, so that it presented itself as a distinct bony cyst only attached to the lower part of that cavity.

The dentigerous cysts usually contain a clear serous, or a glairy fluid, sometimes it is yellowish, or brown from the presence of blood; rarely it contains pus from suppuration of the cyst.

A permanent tooth is most frequently the cause of the cyst formation, but in rare cases a temporary or a supernumerary tooth has been found within the cyst. When the contained tooth is supernumerary it is small and deformed. Even when the tooth belongs to the permanent set its root is usually small and rounded, and is embedded in the cyst wall as far as the neck. The dentinal canal gives passage to vessels and nerves to the pulp, which is always much reduced in size. Occasionally the tooth lies loose in the cyst, either owing to the commencement of the cyst formation before the development of the fang; or, perhaps, from the fang undergoing absorption analogous to that which takes place in the shedding of the milk teeth.

Very rarely a cyst has been found occupied by two teeth, the follicles of which have become fused together.

A case is recorded by Barnes ('Med.-Chir. Trans.,' vol. iv, p. 316), of a cyst in the upper jaw of a young man, aged 17; there were two intercommunicating pouches, one of which contained a supernumerary tooth bathed in "pus," the other only a yellow fatty matter. The tumour was congenital, but had remained stationary until the age of twelve years.

(To be continued.)

AN ADDRESS ON DENTAL LITERATURE.*

By OAKLEY COLES, L.D.S.

WHILST the Pharaohs were still ruling Egypt, ere its occupation by Xerxes, or the foundation of the line of the Ptolemies, Dental science held its place as one of the departments of medicine, and, doubtless, amongst the works in the library founded by Ptolemy Philadelphus, B.C. 284, we should have discovered some evidence of Dental literature, copied

* Delivered at the Annual Meeting of the British Dental Association, held in Liverpool, August, 1882.

or brought from Greece. Herodotus (B.C. 478) speaks of Egyptian Dentistry as of a well-established fact, and Hippocrates (B.C. 430), the Greek founder of medicine, supplies us with the first absolute evidence of the literature of the teeth taking its place with the other sections of medical science. A hundred years later, Aristotle gives us some strange accounts of the teeth, which are chiefly interesting from their inaccuracy, but, curiously enough, he speaks of forceps for extracting teeth.

Thus, more than 2000 years ago, whilst Plato and Socrates were still in the flesh, the section of general surgery that we have met to discuss to-day had the foundations of its literature first laid down. Looking back through the centuries into such a shadowy past, it is difficult for us to realise that we are carrying on the work that was then begun, and are indissolubly linked with traditions so ancient, beginnings so small, yet with a progress so sustained and irresistible in its onward flow towards perfection.

Passing on to the beginning of the Christian era, we find Celsus giving instructions as to some of the operations that may be performed upon the teeth, and devoting several chapters to the subject; but Aretæus (Temp. 90 to 120 A.D.), a Greek physician of the time of Vespasian, confessed that "the cause of toothache was known only to God."

Galen (A.D. 160), who had the advantage of travelling through Egypt in his early life, arrived at a much higher standard of knowledge, both as to general anatomy and that of the teeth in particular. He gives descriptions of the forms of the various teeth, originated the name of the "eye-tooth" for the upper canine, and gives many details of their development, growth, and nervous supply. Many of his observations remain true and worthy of note to this day; but his theories of medicine, after holding sway for thirteen centuries, were overset, and "the divine doctor" Paracelsus, burnt the works of Galen at Basel, A.D. 1520, before the class of pupils to whom he was teaching the new doctrines of the sixteenth century.

Aëtius, in the sixth century, points out the manner in which the teeth are supplied by the trifacial nerve, and attributes their nutrition to the nervous fluid.

The Greek physician, Paulus Ægineta, who studied at Alexandria, A.D. 640, contributes still further to our stock of Dental literature; and Avicenna, the great Arabian physician, refers to the teeth in his system of medicine, written between the years A.D. 980 to 1037.

Whilst Albucasis, or Abulcasis, also an Arab, gives us, in the eleventh century, drawings and descriptions of various.

operations upon the teeth; and he also points out how lost teeth may be replaced by teeth prepared artificially from the bones of an ox or by the adjustment of other human teeth.

Then we had the period that was a dark age for Dental literature, as well as for everything else, when all knowledge was in the possession of monks and churchmen, and the vocation of priest and physician went hand-in-hand. For one thing we must, however, be truly thankful to these men; they loyally preserved the MS. literature of the old world, and kept in honorable, if not useful, trusteeship the wisdom they did so little to increase; if, indeed, they were not actively opposed to human progress.

But, towards the end of the fifteenth century, a mighty power was arising in the southern part of Europe, whose influence either for good or evil, should overshadow and surpass all other agencies.

Printing was invented, and the world arose to try and realise the meaning of a change, that for centuries had been slowly approaching when knowledge should spread over the land and presently reach a climax in the *renaissance* of religion, art, science, and literature, that arising in Italy, should by-and-by gather strength and depth and breadth, till the whole western world rejoiced in a revival, the very enjoyment of which has well nigh prevented its significance being realised.

All the literature to which I have hitherto referred, was within a century to be given to the world as a perpetual heritage. Metz, Strasbourg, and Haarlem, and by-and-by, Venice, Leyden, and Basel, were busy re-producing the works of the earlier times; and under such encouraging auspices men were rising in all directions to take up the broken thread of thought and investigation, and renew with ampler means the labours begun by Celsus and Galen, and the Arabians of the tenth and twelfth centuries.

Vesalius, the father of modern anatomy, born at Brussels in 1514, was to give the great impulse to medicine that was afterwards followed up by his pupil Fallopius in Padua and by Eustachius in Rome. Vesalius, however, fell into the error, reproduced in various forms for many years, of supposing that the deciduous teeth were the germs of the permanent teeth; but Eustachius corrected this error in his tract of 95 pp., written in Rome, but published in Venice, 1563, and gave an excellent account of the teeth, describing their development, with the follicles, vessels, and nervous supply, and imagined the existence of the germs of the permanent teeth in the foetus, although they were not visible.

During the sixteenth century this contribution of Eustachius to the literature of Dental Anatomy was probably the most valuable of any that we have; for his observations were based, not only on the human teeth, but also on those of monkeys and other of the lower animals.

Eustachius is still more noteworthy in the present connection, since his tract, '*Libellus de Dentibus*,' is one of the first separate publications on the teeth of which I can find any record, and we are fortunate in possessing a copy in the library of the Odontological Society of Great Britain. After a laborious life he died in poverty at Rome, 1570.

In Frankfort a quarto volume on '*Dentistry*' appeared in 1536, and a second work under the same title came out in 1576, also in that city; whilst a duodecimo work treating of the '*Eyes and Teeth*' was published in Wurzburg in 1548. De Castrillo brought out an octavo volume, '*De Dentitione*,' in 1557, at Valladolid: and another work, '*Colloquium de Dentitione*,' in 1570, at Madrid. In Basle appeared a volume by Monavius in 1578. These productions, however, are only mentioned as showing that our branch of surgery was still commanding attention; for as to the merits of the works I can say nothing, for I have not been able to examine any of them.

The next independent work on the teeth that may be noticed is by Urbain Hamard. This book was published at Lyons in 1582; it treats of the anatomy and diseases of the teeth, and is highly spoken of by a more recent author, Fauchard (temp. 1728), but I have not been able to obtain a copy of the original work.

From 1602 to 1699 thirty-four contributions in a separate form were made to our literature by Germany; many of these consisted only of dissertations on toothache. One published at Erfurt in 1688, is remarkable for its title, '*Diss. de Atrocissimo Dentium Dolo*re;' and another, published at Leipsic in 1630, for its subject '*Tract. de Dentium Podagra, S. de Odontalgia*.' Whilst a third work appearing in 1642, '*An Dentium Dolori Conferat Tabacum?*' shows that the soothing weed introduced by Sir Walter Raleigh in the previous century was already exercising the speculative faculty of the Teutonic mind. In Geneva appeared a tract '*De Catarrho, Rheumatiga Vitiis Dentium*,' in 1620; whilst in France we had three publications besides Hamard's, but I do not think they were of any importance.

Ambrose Paré, whose name is inseparably connected with surgery, was born in the beginning of the sixteenth century, and died in 1590. He enters with some amount of detail

into the treatment of diseases of the teeth, suggesting the use of the actual cautery and strong acids for the relief of "the most grievous pains in rotten teeth." He believed the teeth, "like other bones," suppurated, and were subject to inflammation, the breeding of worms, &c. He advocates the use of the "pelican" for extraction, and gives many instructions as to the various stages of that operation. His works were published in Paris and Rotterdam, and an English translation appeared in London in 1649.

It is impossible to enter at any length into the details of the various publications that appeared during the seventeenth century. Scarcely any work of importance on Anatomy omitted to give due prominence to the teeth. But more than a passing notice must be given of Malpighi, who, born in 1628, and publishing from 1661 to 1687, recognised the essential difference between the structure of tooth substance and that of bone, pointing out (apparently) the tubular structure of the dentine and its wavy, hair-like appearance. He also mentions and delineates the enamel fibres.

Further advances were made by Leuwenhoek in 1678, who writes of having seen, with a good glass, that the tooth was made up of very small, straight, and transparent pipes, proceeding from the centre to the periphery.

B. Martin, an apothecary, also published, in 1679, at Paris, a dissertation on the teeth; whilst Glisson's 'Anatomy,' 1659; Eysson's tracts 'On the Bones,' 1659; and Blases' 'Contracted Anatomy,' 1666, all contain a fair recognition of the importance of the teeth in the human economy.

Bartholini, the eminent Professor of Anatomy at Copenhagen, in 1648 devotes a chapter to the teeth, in his anatomical work, and enters with some amount of detail into their form and structure.

During the same century Steno was publishing in Leyden (1680) the results of his investigation with regard to the glands and ducts of the mouth, eyes, and nose.

Wharton (Amsterdam, 1669) was giving to the world his observations on the glands in a duodecimo volume, and Highmore was describing, in 1651, the maxillary sinus, that was afterwards to be associated with his name.

Thus, piece by piece, the puzzle of oral anatomy and surgery was being put together, often afterwards to be pulled apart and put together once more as men thought right in their own estimation.

But by the end of the seventeenth century we see that materials had accumulated to such an extent that it only required some master in his work to take them in hand, and

put them in form according to the light of a more profound knowledge and comprehensive judgment.

Such a man arose in France in the beginning of the eighteenth century, in the person of Pierre Fauchard, the father of modern Dental Surgery.

We have passed so rapidly and noticed so briefly the work of over seventeen centuries, that it will be well to pause for a moment whilst we try to realise the conditions under which this first manual of Dental Surgery appeared.

Pierre Fauchard himself was a very good-looking man, if we may trust the engraving that appears at the commencement of his volume, with the typical turned-up thumb that all good operators possess. He was educated as a doctor under Surgeon-Major Alexander. In the preface to his book he complains of the miserable way in which the examination for Dentists is conducted—it had been ordered by the king since 1700—and wishes that a M. Carmeline could have been induced to prepare the treatise that we shall presently examine. He writes with a reasonable amount of modesty, but with no lack of self-esteem. He dedicates his book to Maurepas, the Secretary of State, a man who afterwards got into trouble for lampooning Madame de Pompadour.

Louis XV, "the well beloved," who possessed all the amiabilities of weakness, was King of France, whilst Chateauroux, la Pompadour, and Du Barri, were successively the mistresses of the King, rulers of the State—and diligently employed in sowing the seeds of the great Revolution.

That enterprising native of Edinburgh, John Law, had successfully ruined thousands of people by his Royal Bank and Mississippi Scheme, and in 1728 was living retired in Venice to die in poverty the following year.

In England, George II was King, and Robert Walpole was Prime Minister. Sir Isaac Newton had only been dead a year; Gainsborough, the future painter, had been born a year. Hogarth was rendering immortal the vices of a by no means virtuous period, and Canaletti was delighting the world with paintings that still retain their charm for all art students.

In English literature we had such workers as we have scarcely seen since. Steele, De Foe, Swift, Thomson, Fielding, Richardson, Young, and Dr. Johnson, were all living, and either working or preparing for work that should render this period memorable in all future literary history. Pope was delighting his friends, and maddening his enemies by his keen wit and still keener satire, whilst John Gay was preparing his own epitaph:—

"Life's a jest and all things show it ;
I thought so once, and now I know it."

Oliver Goldsmith was just born, to attain to a higher reputation as an author, than he would ever have reached as a doctor.

But by far the most important event to us was taking place at Long Calderwood, in Lanark, when, on July 14th, 1728, John Hunter was born. Guy's Hospital was only six years old, and no Dental lectures were delivered there till 1799, unless a course of lectures on "the teeth," prepared by Mr. Rae, a surgeon, at the suggestion of John Hunter, in April, 1782, was given at this hospital (reported in the 'British Journal of Dental Science,' vol. i). Westminster Hospital had only been founded nine years, and St. George's Hospital, where John Hunter was to achieve, not only some of his brilliant surgical successes, but to suddenly die, was not established till five years after the year of his birth. The bishops were still examining and licensing midwives, and lunatics might be seen at Bethlem Hospital, as at a show, for a few pence.

The first dock in England, built at Liverpool, was only twenty-nine years old, and the Blue Coat School of Liverpool had only been founded nineteen years. The fly-shuttle of John Kay, of Bury, and the drop box, of Robert Kay, with Hargreave's spinning jenny, and Arkwright's water frame, were not to be known for some few years yet, and calico printing was still to be invented.

Ruspini was, I think, practising as a dentist in Pall Mall, in a house situated where the Reform Club now stands, and the elder Jullion (perhaps) in Coventry Street. Berdmore, the successor of Rutter and Green, was engaged in the exercise of his profession in Racquet Court, Fleet Street, in a house where, in 1770, the first of a family that has commanded the love and respect of every one who has had the pleasure of knowing them, carried on the work for three generations. I need hardly say that I refer to the grandfather and descendants of our esteemed treasurer, James Parkinson. Berdmore was dentist to the then king, George II, and the first Parkinson held the same appointment to George III, and died during his attendance on his Majesty, at the time of the King's visit to Bath, in 1804.

Having thus endeavoured to give the local colouring of the times when Fauchard's book appeared, 150 years ago, we may return to an examination of that work in some of its details. It consists of two volumes—making 919 pages, and illustrated with 43 full-page engraved plates, containing a large number of figures on each plate. The volumes are extremely well arranged, and although many of the appliances figured and described would seem very crude—not to say barbarous

—according to our present ideas, other of the items have held their own in use and reputation to the present day. It would be impossible, within the limits of the present paper, to give any just idea of the large amount of labour and judgment that is displayed in this work. It would well bear translation, not only as showing what was then known, but as foreshadowing what was to be done in the future.

I have seen a reference to Berdmore's work, as having been written in 1723, but I have not been able to obtain a copy of that date, and the only edition that I know of, is that issued in 1768.

Mention should be made of Bunon's 'Diseases of the Teeth,' published 1723, and of Duvernay's work, brought out also in France in the early part of the same century; but neither of these require more than this passing comment.

Winslow, in 1732, in Paris, and Ludwig in Germany, also contributed to Dental literature, but not at all in a complete manner. The writers on general anatomy were giving us various fragmentary notes on the Dental tissues, but Fauchard's labours supersede them all in method and completeness.

From 1732 to 1770 we have a large number of works on Dentistry, or sections of that subject, including, amongst many others.

Gerald, 1737; Larini, 1740; Boerhave, 1741; Bunon, 1741; Hurlock, 1742; Mouton, 1746, Le Cluse, 1755; Bourdet, 1758; Jourdain, 1766; Ruspini, 1768; Berdmore, 1768; Herissant, 1771; Hunter, 1771 and 1778; Plenck, 1778; Jullion, 1781; Wooffendale, 1783; Blake, 1795; De Chemant, 1797.

It is noticeable, though not perhaps noteworthy, that the appearance of Fauchard's manual produced in a few years such a great number of works on Dental matters of very varying merit; and we shall find in the early part of this century a similar experience following upon the production of John Hunter's works. This phenomenon is common to all departments of literature and science, and it would not be without interest to ascertain the origin of these mental excursions. It is usual to say that So-and-so gave a stimulus to investigations in such-and-such a direction. That may be so, but I am inclined to think that the movement we are discussing might be subordinated to some general law, in which a number of people have been subjected to similar influences individually, that at the right moment find expression in publication. Poetry, you know, is sometimes spoken of in the words:

"What's oft been thought, but ne'er so well expressed."

So you will often find in technical literature, that the ideas embodied in it have been floating about, like stray sunbeams, waiting for some one with skill and enterprise enough to secure and analyse them for our service.

There is, further, the consideration to be borne in mind that man is an imitative animal, and the universally applicable condition that "like begets like."

All the works to which I am now referring are interesting, and many of them, of course, very valuable as contributions to Dental literature; but there are some to which I may draw your attention more particularly.

Bunon's volumes, published in 1741 and 1746, are excellent for the times in which they were written, and one volume contains what I presume we may call the first Dental pharmacopœia.

Hurlock, 1742, discusses the serious influence of the seasons upon dentition.

Mouton, in 1746, gives us some interesting chapters on "Artificial Teeth." Bourdet, in 1757, in two volumes, published interesting information that was apparently much appreciated by his contemporaries. Jourdain, in 1766-8, brought out two excellent volumes, but the plates printed at the end of the book, on the old-fashioned blue paper, must have been most alarming to nervous readers.

Nor had Germany and Holland been idle during this century, if we may judge by the number of works that appeared and the variety of their titles. During this eighteenth century these two countries gave us no less than sixty-three publications, of which I have been able to obtain the names, and doubtless there were others of which even the very names are, I fear, lost to us. I cannot venture to enumerate all these works here, but must refer those who are sufficiently interested in the subject to the appendix of this paper.

In the year 1768, one of the most important and earliest English works appeared, viz. that of Berdmore. It is an interesting volume, and the author, to whom I have previously referred, was evidently master of his subject. He was educated as a surgeon, and practised at this time in Racquet Court, Fleet Street. One author says that he was made Dentist to the King on account of this work. Of that I can find no evidence. Certain it is that he was Dentist to the King, and that the appointment remained attached to the house till the death of John Parkinson, at Bath, in 1804.

Ruspini, of Pall Mall, brought out a book in the same year, in which he attributes caries to "external influences acting upon the compressed vessels of the teeth."

But it is now forty-three years since John Hunter was

born, and during those years the busy brain of that great worker had been slowly accumulating facts and observations to astonish the scientific world with his many-sided capabilities. As interesting to us first comes, in 1771, the 'Natural History of the Teeth,' with its beautiful illustrations, and the 'Diseases of the Teeth' in 1778. No description or critical abstract of mine could do any justice to these splendid works. They are accessible to every one, and should be read by all who take a permanent interest in Dental literature.

Those who have critically examined the Elizabethan writers, have always recognised the immense influence exercised over modern English by the dramatists and poets of that period.

The forms of expression—the sentiments themselves—have taken their place in the ordinary language of every-day life. People for many years have been talking Shakespeare and Ben Jonson without knowing it. This is the best monument to a great author, when "the very coinage of his brain" becomes the common-place of the national life.

It will be right, I think, to say the same in reference to John Hunter; we scarcely realise, even if we ever knew, how much we have been writing and talking Hunter ever since his works appeared. This is really due to the fact that it would be difficult to say, in treating of any subject on the teeth, where Hunter leaves off and the new author begins. It must have been a great work that could be received like this into our literary life, and assuredly Hunter was a great leader of the thoughts of men.

It is interesting to think of the London Dental Hospital being within sight of 28, Leicester Square, a house that Hunter bought in 1785, in order to build his museum, which extended over a plot of spare ground into Castle Street. The exact spot is now occupied by the Alhambra Palace Theatre.

In 1781 a man named Jullion wrote 'On the Teeth,' and the book, of no value in itself, is interesting as containing at the end a list of operations and the fees charged in those days. Thus, for transplanting a living tooth the fee was £5 5s.; "ditto, a dead tooth, £2 2s.;" a complete set of human teeth, with gold springs, £73 10s.

The first Dental work published in Liverpool of which I can find any record is by R. Woffendale, and bears the date 1783, nearly a century ago. The book itself, 'On the Teeth,' is of the average stamp, speaking, with other matters, of transplanting teeth and securing them by ligature, as of a common operation; but the work becomes very interesting from the fact that this man who, doubtless, started from Liverpool, was the first Dentist who ever practised in

America. He went out to the American Colony, as it then was, in 1766, practised in New York and Philadelphia for two years, and then, not finding sufficient support, came back to England in 1768. Whether he remained in Liverpool after 1783 I cannot tell, but in 1796, that is, twenty years after the declaration of American Independence, his son went out and settled in New York. The elder Woffendale was a pupil of Berdmore, of Racquet Court.

Meanwhile, Gardette, a surgeon from the French Navy, was the first medically educated Dentist in New York, going there in 1783; and James Greenwood, commencing practice in 1778, was the first native-born American Dentist. Thus we see that Liverpool may claim to have provided the United States with the first and fourth Dentists that they ever had.

Blake's essay on the teeth, delivered as a thesis before the University of Edinburgh in 1795, on his taking his degree, is an interesting contribution to our literature, and was translated from the original Latin into English, in 1801.

In the following year appeared the last work of the century, to which I shall call your attention. It is a monograph upon artificial teeth made of mineral paste, by De Chemant, who lived in 1797 at 2, Frith Street, Soho, a house now occupied by a carpet designer and manufacturer.

De Chemant was practising as a surgeon during the earlier part of his career, but having discovered his mineral paste, turned his attention to Dentistry. He was a handsome man, if we rely on the portrait that adorns his book, and must have held a position of repute. At the end of the book we find an English version of the old French fashion of "letters of approbation," as in Fauchard, and amongst others one from Dr. Jenner, dated from Hertford Street, Mayfair. This is, of course, the Jenner to whom Parliament voted £30,000 for his service to the State in the discovery of vaccination.

A CONSIDERATION OF SOME OF THE CAUSES WHICH GIVE RISE TO DENTAL DECAY.

By ALFRED CARPENTER, M.D.

(Concluded from p. 162.)

The Dentist has a serious duty to perform when these cases come to his notice, viz. to inform the parent of the

constitutional taint which exists in the child, and to advise that measures be taken to diminish its incidence, by counteracting its influence by such means as temperance, chastity, and correct diet. The children of this class are more prone to nerve disorders than other people, those nerve disorders often being of the most painful kind. A warning to the parent, and if the child is old enough a warning to himself, that there is very much to be done to get rid of a taint which touches the foundation of life, and affects the battery before it can show its results in the *débris* of that battery. How this effect is first produced is unknown to us, but that it does show itself in the second and even a third generation is now fully acknowledged, and it ought to be taught to young men as one more argument against the vice of unchastity and the danger of uncleanness. The sequence is probably due to failure of nerve growth; the teeth are sometimes shed even before they are fully formed. The teeth cannot develop, because the material required for their production is not properly formed: there is no *débris* of the right kind.

Caries also is probably favoured by the condition which promotes tubercular tendencies. A minute particle of perverted protoplasm is laid down in the cell membrane which forms the dentine. It is chemically defective from having a tendency to fatty degeneration rather than to a proper deposit of phosphate salt. A single cell may be thus impaired by defective structure, or half-a-dozen cells may be touched. As time goes on the defective cells soften, and, by means of the imperfection of the organic matter which pervades the tooth, which is in excess of its requirements, there is a want of proper balance between the enamel, dentine, and the organic matter; there is defectiveness in their composition as well as in the support which is required, and in consequence the tooth is more liable to wear and tear than would have been the case if the inherited defects had not existed; a small hole is punched in the tooth, which, if not resisted by the Dentist, will give a *locus standi* to foreign bodies, to vibrios, and to bacteria, and thus allow of assaults being made upon the tissue which is still sound by the secretions which the living organisms produce in the cavity of the tooth, and caries then arises.

An attempt is generally made, though unsuccessfully by by nature, if not assisted by art, to remedy the mischief. A small amount of chemical action takes places in the hole, which, failing in its object, in the course of time leads to extension into the pulp cavity, and ultimately to the total loss of the tooth. It is necessary for the best interests of

the children of tubercular parents, that their teeth should be frequently inspected by the Dental Surgeon, and those punch-like holes cleared out and stopped before the pulp cavity is reached. In these cases the conservative power of the Dental Surgeon is very manifest. He should advise a close attention to the rules which the obvious tendencies to tubercle require to be observed. He should urge upon the parents of such children to beware of the mischief which, unless due care is exercised, will be in store for them. If germs of perverted protoplasm are found in the dental organs, they will be found in other tissues. I have reason, however, to believe that when such tendencies show themselves on epithelial structures in early life, and when the deeper seated organs are not at the same time affected, that there is a greater chance for hereditary conditions to be overcome. The tendencies to disease being limited to epithelial tissues, it is reasonable to hope that, with due attention to the rules which should be observed for securing a healthy state of body, that there will be an evacuation of *materies morbi*, and so the child may escape from the evils which it has inherited.

I have seen in some families, where the syphilitic taint has been undoubted, that those children with defective teeth who have skin eruptions, in whom the defect has been recognised, and all exciting causes for further mischief withheld, such as the abuse of mercurial medicines and excessive use of animal diet, that they have escaped the evils which have befallen other members of the family in whom the epithelial structures have not been at first affected, but in whom cerebral mischief has shown itself at an early date. I have seldom seen the presence of tertiary syphilis on young children without finding evidence of mischief in the teeth, the hair, the nails, the epidermis, all more or less showing the taint. In other instances I have also seen the teeth alone giving such evidence, and in those cases the individuals have grown up to man's estate in fairly good health, though the chances of such results are not great. But if in addition to the taint, as shown by the epidermis, there is also some organic disease in some of the splanchnic viscera, there is no likelihood that the child will make old bones, or even grow to man's estate. A large number of those cases in which early death arises from cerebral disease are closely connected with hereditary syphilitic taint, and the insight as to cause is obtained from the irregular, the jagged, and stained condition of the dental organs. We get a similar insight into the tubercular tendencies in certain families. The teeth are not irregular, and jagged, and stained, but they are tho-

roughly carious—there is a want of true bone, of true enamel. The material provided is fatty and friable, and with this state of the teeth we have generally a tendency to bow legs and soft, irregular skulls. In these cases it is defective innervation from the first, which has arisen from foul air, deficient sunlight, and bad food. All these causes have been at work upon the organisation of the parents, and show themselves in their progeny. A continuance of such causes acting upon the child increases very much the tubercular tendencies which exist in the constitution, and render him more easily liable to be influenced by cacozymes or septic bacteria, which are more easily developed and flourish most in foul air and dimly lighted dwellings. Children, therefore, having the first set of teeth carious require something more than surgical aid. The parents should be advised to avoid the causes which promotes septic developments, to cultivate the benefits which are to be derived from the beneficial influence of sunlight, from a pure dry air, and from simple, unstimulating food; and the surgeon who only attends to the teeth has only done a part of his duty; but it is also only fair to say that this class of cases seldom comes into the charge of the Surgeon-Dentist at all.

I have seen conditions in strumous children similar to those born of syphilitic parents. When the evil has fallen upon the epidermis, and has shown itself in defective teeth, with scaly or vesicular eruptions upon the skin, the internal organs have escaped, and the children, having thrown out the morbid matter which they inherited, have grown up into healthy and well-developed individuals: that is, provided the laws of health have been observed, good unstimulating food, fresh milk and vegetables used, and fresh dry air with sunlight sought for. I have on three or four occasions seen two or three children in the same family with bad temporary teeth and eczematous eruptions, yet grow up satisfactorily, whilst those with clear skins, and not showing any defects in the epidermis, have died in early life of cerebral disorders or mesenteric disease of a tubercular character.

The effects of the gouty diathesis do not show themselves so markedly upon the teeth in early life, as is the case with the syphilitic and the tubercular states. The tendency to disease which this diathesis does promote among the descendants of gouty people, is more likely to manifest itself in another way, and other tissues suffer more than the teeth, though caries is not uncommon. The quality of the nerve cell is not necessarily damaged in a gouty man, and as a consequence the teeth do not often suffer. The children of

gouty people experience tendencies to blood maladies which (just as syphilis in the beginning of life) affect in the end every organ of the body; but it is in connection with the nitrogenous material and not with the phosphorus of the constitution—the organic rather than the intellectual regions of the body suffer from its incidence.

The rise of gout and its sequences are connected with excess of material, and with derangement of the digestive organs which is the consequence of that excess, rather than to the introduction of an extraneous poison, or by the action of an arrested growth. Syphilitic taint is probably due to a parasitic life; tubercular growth arises from the presence of perverted protoplasm in the blood, in which bacterial or other forms of parasitic life can increase and multiply. Syphilitic conditions are due to a taint which will affect every person into whose organisation its first cause finds admission, and from whose tissue it has not been immediately ousted. The tubercular will only develop in those persons who have lived unhealthy lives: its influence is continued by their surroundings; whilst gout is not brought on by either of these conditions: it is a state induced by excess, and its sequences are on different lines; the surroundings may be quite healthy, but the habits are vicious, indolent, and self-indulgent.

The conditions which produce it are not common to, and are not obtained in, early life. They more often arise after the man has attained his full growth. His progeny are born into the world, in the majority of cases, before the humours of the body have been able to act injuriously upon the sexual organs. It is seldom that a constitution is thoroughly gouty before a man is forty or fifty years of age; thoroughly gouty men do not have families, to any extent, after they have become saturated with gout; thus the specimens afforded us are limited as far as children are concerned. Still it is, I think, a fact that the teeth do decay sooner in some of those who are descended from gouty parents; they are more subject to caries, which disease has its origin in fatty degeneration of the dental cells, and the subjects of it are especially liable to those periodontal inflammations which ultimately lead to necrosis. Gouty men and women also suffer very much from neuralgia and other conditions of the system which have their origin in a lithic acid diathesis, and they can only be properly cured by associating the Dental treatment with a proper diet, and the judicious use of remedies against the gouty tendency. The presence of a lithic acid diathesis is often accompanied by pain which reflects itself upon every func-

tion which the body has to perform. Indeed, the state of the mouth is frequently the Nemesis which attends upon over-indulgence; for the tender state of the gums and teeth put an end to feasting, and induces that fast which is the true cure for excess of nitrogenous material in the blood.

Future history will show whether the children of total abstainers have an advantage over those of non-abstainers as regards soundness of teeth. At present there is no proof that the acknowledged benefit of total abstinence does give any immunity as regards hereditary Dental disease, but that abstinence does assist to save the teeth of the goutily inclined, I have had too many instances before me to doubt the fact, whilst the sufferings which stimulants induce in those who indulge in them is also as manifest. Celsus writes in his sixth book, 'De Medicina:' "*In dentium autem dolore qui ipse quoque maximis, tormentis annumerari potest, vinum ex toto circumcidendum est. Cibo quoque primo abstenandum.*" That ancient and generally accurate writer is very decided upon this point, and yet it is curious how some modern physicians ignore the teaching of that acute observer, and prescribe alcohol in all its forms, and in excessive doses, for the relief of dental neuralgia, with the moral certainty that they are only postponing the evil day, and adding to its ultimate intensity. The paralysis which alcohol induces in the vessels supplying the sentient nerve gives temporary relief, but the pain of to-morrow is all the greater from the anæsthesia of to-day. If two patients suffering from dental caries, and who are intent upon continuing the presence of the offending organ in the mouth, the one who submits to the pain without using anæsthetic remedies will get over the action which is causing the neuralgia much sooner, and will get earlier relief, with a far less expenditure of patience in suffering, than the man or woman who flies to stimulants for temporary relief from their distress. The alcohol simply delays the action which is necessary for the removal of the exciting cause, and does not at all assist to its cure. In theorising, however, upon the subject of alcoholic indulgence, we must bear in mind that, as a rule, children are total abstainers; but I believe that if we could separate those who suffer from hereditary causes from those who have no hereditary taint in their dental appendages, and then follow the total abstainers through life, and compare them in their decline of years, I think it would be found that the total abstainers had suffered comparatively little from neuralgia, or any painful malady in the dental organs, as compared with the wine-bibber.

I do not yet know enough of the alliance between dental diseases and rheumatism, or of the connection, if any, with the cancerous cachexia, to make any specific allusion to those tendencies, even if time would allow me to do so; but there is a field for observation in connection with the development of lactic acid in the constitution, and the rheumatic diathesis, which the state of the teeth might assist to determine. I leave that for others to follow out. If I have given lines for future thought to those who have a more immediate connection with the results of dental disease than I have I shall have effected my object. I think that our design should be, not the establishment of a foregone conclusion by bending our facts to our theories, but a steady observance of facts, a correct registration of conditions, and then in the end a proper generalisation may be obtained, which will be based upon the truth. This should be the desire of every one of us to get established upon a sound and satisfactory line, even if its establishment should lead to a large diminution of that work which has already taken place in hospital practice, and made conservative surgery of more importance than heroic performance. It will materially diminish extractions, and render prevention of disease of greater import, even to the Surgeon Dentist, than its radical cure can ever be.

ANNOTATIONS ON ANÆSTHETICS.*

By SAMUEL OSBORN, F.R.C.S.,
ANÆSTHETIST TO ST. THOMAS'S HOSPITAL.

(Concluded from page 176.)

A FALSE impression when feeling the pulse may be very easily conveyed, as in a case I remember where the patient, lying upon the arm, compressed the main artery and stopped the pulse greatly to the consternation of the anæsthetist. The case was one of removal of a tumour from the right scapula, the radial artery being abnormally situated and absent on the right side. The patient was suddenly brought over on to the left side for the convenience of the operator, and the left radial was stopped by compression from the weight of the body.

* Reprinted from pamphlet, with author's notes of experience to present date added.

Elevation of the jaw, by pushing the angle of one or both sides forwards, acts upon the tongue and gives freer respiration. The converse also is easily seen, as I have frequently demonstrated to the students, that by pushing the lower jaw backwards the breathing can be immediately impeded or altogether arrested. As it is difficult to raise the jaw, both hands being occupied, one holding the pulse and the other the inhaler, I have devised an underchin support which I call jaw compasses, being of that configuration, for the purpose of going behind the angles of the jaw and drawing them forwards and upwards. The administration by this procedure being considerably assisted. A circular india-rubber band, similar to that used for keeping letters together, passed over the nose-piece of the inhaler and under the symphysis of the chin, will also answer the same purpose.

Death may occur from cerebral hæmorrhage, the diseased blood-vessels of the brain giving way under the increased blood pressure.

Death may also occur from failure of the heart's action (syncope) or from failure of respiration (asphyxia), the former being the more frequent cause. Impending symptoms of the former are by far the more serious of the two, for the heart's action once having stopped it may never be resumed, whereas respiration may be artificially carried on. I have seen one death occur during the inhalation of ether. The case was under the care of Sir William MacCormac, in a man of forty-five years of age, being operated upon for malignant growth of the rectum. The patient had been previously prepared, and after having been placed in the position for lithotomy, and the sphincter ani forcibly split, the heart's action suddenly stopped and was never resumed. The face was at first pallid, but subsequently became turgid. Ether had been given for twenty minutes, seventeen drachms being the amount used. He became quickly under the influence, the first stage of excitability being hardly at all shown. No vomiting occurred. Every means were tried to resuscitate the patient but without avail. The post mortem showed œdema of the right lung, and both lungs greatly adherent to the pleural surface. The smell of ether was very noticeable in making sections of the lung. Heart healthy and valves perfect.

The post-mortem appearances of fatal cases show that hepatisation of the lungs with adhesions to the pleural surface, or a fatty heart, or one having adhesions to the pericardium, are more especially antagonistic to successful anæsthesia.

The element of danger is more often present in rectal

operations. Why I cannot say ; but undoubtedly I have had, and others also, more anxiety over the administration of anæsthetics in these cases. Whether it arises from the fact that *all bloodless operations are dangerous in plethoric individuals*, or whether diseases of the bowel are unusually depressing, and the highly sensitiveness of the rectum requires a greater degree of anæsthesia, I am not in a position to say, but the fact remains the same.

Ether usually causes first a failure in the respiration, whereas chloroform causes first a failure in the pulse.

Ether may be given as an accelerator of the heart's action ; this was well shown in a little child being operated upon by Mr. Sydney Jones. The child's pulse failed three or four times under the influence of chloroform, and necessitated its discontinuance. Ether being substituted, the heart regained its strength, and the operation was safely conducted. I have since, in other cases, administered ether as a stimulant to the heart when symptoms of its decreasing power have occasioned alarm.

In cases of threatening asphyxia never trust solely to thrusting the lower jaw forwards, but forcibly draw the tongue out of the mouth by forceps. Artificial respiration, after Sylvester's method, must be immediately commenced and carried on until all hopes of recovery are at an end. Whether air enters the lung can be determined by the more healthy appearance of the face, as well as by hearing the air passing freely to and fro. Œdema, or spasm of the glottis, or obstruction in the trachea, must be met by immediate tracheotomy, and patients have been frequently saved thereby. From observations lately made by Dr. Howard ('Lancet,' May 22nd), it is probable that traction upon the tongue has no effect in raising the epiglottis ; therefore, if traction upon the tongue does not relieve the threatening asphyxia, by allowing a freer current of air to enter the lungs, tracheotomy must be immediately performed. The venous congestion is also relieved by opening one of the external jugular veins, and at the same time, as a good current of fresh air is allowed to reach the patient, the skin may be stimulated by flicking the chest with the wet corner of a towel.

Such is the treatment of threatening asphyxia, the diagnosis of which from one of syncope is of the greatest importance, as the remedies applicable to the latter materially increase the symptoms of the former.

In cases of stoppage of the heart's action, in addition to percussion of the heart with the wetted end of a towel, artificial respiration must be immediately commenced, because

the stoppage of both factors would make up the whole fatality. Inversion of the body should be always tried if stoppage of the heart's action occur. The head being lowered and the legs elevated the blood is sent to the upper part of the body ; a similar effect is produced but less quickly by the application of bandages up the legs. The latter may be adopted with great advantage in operation about to be performed upon anæmic patients. Inversion of the body should be maintained until the heart's action is resumed, for success has been found to follow this procedure.

An intermittent action of the galvanic current may be applied over the region of the heart or subclavian triangle, and the vapour of ammonia or, better still, ether, applied to the nostrils. As a *dernier ressort* electro-needle puncture of the heart may be tried, but its success is questionable.

In conclusion, I would impress upon all surgeons these main points in connection with the administration of anæsthetics :

1. Always have the anæsthetic given by some one who is in the constant habit of administering it, and who will attend to that solely.

2. Never administer anæsthetics unless absolutely necessary.

3. Neither ether nor any other anæsthetic is absolutely safe.

4. Never keep a patient under the influence of any anæsthetic longer than is absolutely necessary.

Reflections from the Surgery.

ALVEOLAR ABSCESS BURSTING BEHIND THE VELUM PALATI.

Case reported by F. HENRI WEISS, L.D.S. Eng.,
DENTAL SURGEON TO THE NATIONAL DENTAL HOSPITAL.

WITHIN the last few days I have seen a patient who was troubled in a manner which, although not painful, was very distressing, and as I think it may be of interest, I will venture to state briefly the facts.

On the 29th of January a gentleman called upon me for the purpose of having the mouth prepared for an artificial denture, and I found it necessary to remove four or five roots, amongst these, was that of the right upper wisdom. No special difficulty was experienced in its extraction, but when he was viewing it he told me it gave him a great deal of trouble two years ago. He had been in great pain with swollen face, and always considered that the attack had made his throat delicate, for he was sure it was slightly ulcerated, as he was troubled with a peculiar expectoration with unpleasant smell and taste. At times it was worse than others, and several gargles having been used without benefit he thought it was chronic. As, however, there was very slight pain he did not pay much attention to it. I told him that it was possible for teeth at the back of the mouth to give rise to soreness of the throat, more particularly when the lower wisdom tooth was being erupted, and that it was not beyond the range of possibility that the root might have had something to do with it or it might be a post nasal discharge. He was unwilling for me to explore the parts so nothing more was said. On the 8th inst. during some remarks he told me that all the unpleasant taste had gone. If he expectorated from the throat it was of quite a different character, so I concluded that the attack of alveolar abscess of two years ago had caused a fistula to establish itself behind the soft palate, and from time to time a discharge had passed down the fauces to the throat.

A FRENCH surgeon says, that on chloroforming some mice and lifting them by their tails they tried to bite, but on laying them again in a horizontal position they resumed insensibility. Acting on this hint, when a patient showed signs of collapse under a dose of chloroform, he dropped the patient's head over the bedside and raised the feet quite high. The patient at once became conscious; when laid straight on the bed he became insensible again, and a return to lowering the head and raising the feet for ten minutes was required to fully counteract the chloroform. It is thought, that by aid of this treatment, anæsthetics may be used with a high degree of safety.—*Ohio State Journal*.

British Journal of Dental Science.

LONDON, MARCH 1, 1883.

THE opinions which reach us from various sources on the way in which the benevolent funds of kindred bodies are managed, hold out the hope that we shall be able to establish ours on a basis which will lead to results satisfactory to all. The experience which has been gained by the years they have been in existence must aid the executive in their deliberations. There cannot be a clearer meaning to its object than that relief is to be afforded to those who are in need, so that it only remains for us to ascertain who are to be considered entitled to such help.

We are aware that the foundation of a benevolent fund was to be one of the first works of the British Dental Association, as will be seen by a clause in its rules. Taking into account that that body has vested in it powers by which it can mediate between Parliament or the General Medical Council and the profession, and therefore add influence one way or another to any new law that is likely to be established, its control over the benevolent fund should be regarded in the same light. We cannot help referring to a prevailing feeling which seems to exist, that the fund is to be connected with the members of the Association only; and it has been pointed out by a contemporary, that by its laws only one fifth of the entire profession can become members, the restriction not being through numbers but by mode of practice. If, on the one hand, it is a fund under the control of the Association, but for the benefit of the entire profession, it must and will be supported by all; but, on the other hand, if it is for the benefit of the members of the Association only, with occasionally an exceptional case, then it must derive its support from within that limited circle. This point does not appear quite clear. Our feeling with regard to it has been that

every effort should be exerted to contribute, so as to place a sum of money in the hands of the committee by which they could start the work, and that the committee, although composed of the members of the Association, should conduct its business irrespective of any connection with that body. We have understood that it was for the benefit of the profession and will not cease to give our support so long as it is such. The wider the contributions, that is, from all grades in the profession, the wider will be the distribution; not that it must be regarded in the same light as benefit assurance societies, for the sums which will be given are to be done so unconditionally, and not as either a return for a subscription or a loan.

We shall be glad to receive further opinions on this most important subject.

WE hear that a formal proposal is about to be made to reduce the annual subscription of the Odontological Society of Great Britain from two guineas to one. Taking it in comparison with the medical profession, we think the step will be most unwise. As Dentists we have but one learned society in England, the surgeon and physician four or more. The call of two guineas per annum is not a heavy one, but when it is remembered that to keep the library and museum stocked worthy of our calling, considerable outlays must be made. At the present time it enjoys the same habitation as the London Dental Hospital, but that institution may require the space for clinical teaching, and without a reasonable sum invested most disastrous consequences might result. The Treasurer's report always shows how judiciously payments are made, but we might suggest one or two things which, although adding to the expenses, would not lessen the dignity of that Society.

A CORRESPONDENT to the 'British Medical Journal' asks, in reference to the contagion of phthisis, whether Dentists are specially liable to it as they are constantly taking in the

breath of persons so affected. Recent observations made by Mr. Heneage Gibbes, the well-known microscopist, are interesting on this point, for he clearly demonstrates by delicate tests that bacilli are always found in the sputum of phthisical patients, whereas in no single instance has he observed them in other catarrhal inflammations of the lungs. If we consider their presence is due to the favorable situation which a cavity in the lung would be for their development, and the possible nourishment they receive from the broken-down tubercle, and further that many may escape the mucous and carry into the air germs of tubercle, then by inhaling them, as a Dentist must do, he is placed in a serious position.

It remains to be decided whether tubercle-bacilli have the power of being carried by the breath, and even if they should what contagious atoms they could possibly take with them. The subject of bacilli in the lungs of phthisical patients has occupied the attention of most of the leading pathologists ever since Koch demonstrated their existence, not many months ago.

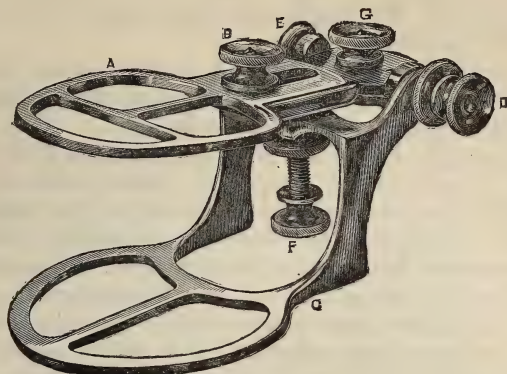
Manipulative Miscellany.

All instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month, they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits, and without any intention or wish to pit one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

A NEW ARTICULATOR.

MESSRS. CODMAN AND SHURTLEFF, of Boston, the inventors of the Dibble plugger, have introduced an articulator which, by the additional points in construction, should very soon make it well known in the profession. The accompanying woodcut will show its various parts, so its action only has to be described. The upper jaw (A) slides backwards and forwards in grooves, so that by loosening the screw (B) this motion

can be obtained without danger of lateral displacement. There is a second plate upon which the jaw (A) moves laterally and is controlled by the screw (G) so that either of these motions can be obtained entirely independently of each other. The screw (F) which adjusts the space between the jaws (A



and c) is provided with a set nut which prevents it from unscrewing. The screws (D and E) which form the hinge are cone-pointed and furnished with set nuts, so that the wear can be taken up and the movements always kept accurate. On the plate (A) there is a series of graduating marks, by which the operator can see just how much change he has made in the articulation.

Mr. Rutterford has received a consignment of these articulators, where they may be viewed.

Reports of Societies.

STUDENTS' SOCIETY OF THE DENTAL HOSPITAL OF
LONDON.

ORDINARY MEETING, FEBRUARY 12TH, 1883.

W. C. STORER BENNETT, Esq., F.R.C.S., L.D.S., President, in the
Chair.

THE minutes of the previous meeting having been read and confirmed,

The SECRETARY read a letter from Mr. Walter Harrison, in which he said that, in consequence of leaving London, he was obliged to relinquish office as Secretary of the Society.

The proposal of the Council that a vote of thanks should be accorded to Mr. Walter Harrison for his able and energetic past services was unanimously carried.

Mr. J. O. Butcher was elected Joint-Secretary vice Mr. Harrison, and Mr. Latchmore was installed in the vacant post of Treasurer.

Mr. Butcher presented to the museum of the Society the skull of an albatros, also a well-marked case of Dental exostosis and a three-fanged lower molar.

Through Mr. Hern, Mr. Baudry presented to the museum a case of germinated temporary central incisor that had occurred in his practice. He requested that the opinion of the members should be taken as to the probability of the permanent successors being normal or abnormal. The case was discussed, and the weight of opinion was in favour of the supposition that there was no reason that normal enamel organs should not have been given off at a period anterior to the date when fusion of the Dental germs took place.

Mr. Cornelius presented to the museum models illustrating a case that came recently under his notice, in which a man, at the age of fifty-three, erupted a first right upper bicuspid, and one year subsequently a second left upper bicuspid. Also a model of a supernumery bicuspid in the lower jaw.

The PRESIDENT then read his inaugural address,* after which he called upon Mr. Hern for his paper on "Some Points in Dental Diagnosis."*

In the discussion that ensued the following gentlemen took part:—The President, Messrs. Truman, Albert Baldwin, C. H. Davis, Robbins, and Paterson.

At the termination of the discussion Mr. HERN replied, and a cordial vote of thanks was awarded him for his valuable paper.

The PRESIDENT thanked the gentlemen who had brought forward communications, and the Secretary was directed to convey the thanks of the Society in writing to Mr. Baudry.

The PRESIDENT announced that Mr. Paterson had promised to read a paper at the next meeting, and the proceedings terminated.

* Will appear in our next issue.

CONTINUOUS GUM FACINGS FOR USE WITH VULCANITE, CELLULOID, OR OTHER BASES.

By A. B. VERRIER, L.D.S.I., Weymouth.

(Continued from page 132.)

IN preparing cases for gum facings the work is much the same as for vulcanite, except that, as there is no fear of vulcanite or other unsightly material showing, the teeth may be used short or long, narrow necked or broad necked, regular or irregular, at the discretion of the operator, and in conformity with any teeth remaining with the patient. The labial surface of the wax with which the teeth are mounted on the model may be moulded to a form most suitable for each case, and so built out as to make good all loss of natural tissue by absorption, &c.

In this portion of the process of course lies the operator's chief opportunity of exercising what skill, taste, and delicacy of artistic merit he may possess or acquire. It is the only really artistic part of the work, being that of the sculptor imitating nature, and on which the ultimate beauty of the case depends.

The teeth with their wax mountings are then to be removed from the model and invested in a paste composed of coarse plaster of Paris, powdered asbestos, and fine fireclay to about a half inch thickness, in the same manner that flat teeth are usually prepared for soldering on gold plates. This investiture will naturally require to be varied according to the exigencies of special circumstances. When perfectly set the wax may be boiled out and strips of platina, hard or soft, adjusted round the backs of the teeth in absolute contact with their pins. These strips may be in several pieces for the convenience of fitting provided the ends are allowed to overlap and touch each other.

All these points of contact should be boraxed and rather large pellets of fine gold placed for soldering, as platina always absorbs a considerable portion. The gum-body (I prefer Dr. Allan's) should be mixed with distilled water into a paste the consistence of thick cream, in a china or glass shallow jar, which should have a close fitting cover to exclude dust, and with suitable spatulas, camel-hair pencils, and liberal use of distilled water packed into the mould and around the necks of the teeth and condensed with agate burnishers. The more

solidly this packing can be performed the less the chance of flaws or surface cracks, but should these occur they can be remedied at a subsequent stage of the work, which when dried as for soldering is ready for the first firing. It is then to be placed on a stage in the muffle and the gas in the furnace lighted, the furnace heated and the muffle slowly inserted so that the work is gradually heated until the fine gold flows and solders the metals, when the gum-body will also be sufficiently baked or "biscuited;" the muffle may now be removed and the work cooled, when with care the investment may be removed and the facing washed clean, any particles adhering to the surfaces of the teeth may be removed by rubbing with a piece of wood or cane and a little of the gum-body powder. Any adjustment to the model by grinding or adding should be done at this stage, and any flaws in the gum-body made good by adding a little more body paste and drying with blotting paper. The piece supported on a platina wire frame or stage, but without further investiture has to be again fired and cooled as before, when it is ready for the gum enamel. This is to be placed over the gum-body with care and taste, bearing in mind that where thin it will give a pale gum, and where thick the reverse. If the gums to be imitated are smooth and thin where they come in contact with the teeth, the gum enamel must be so put on irregular surface as required, scrupulous care as to cleanliness must be observed, the piece put into the muffle as before for its final heating, which is to be greater than the previous ones until the gum enamel fuses sufficiently. This usually takes from five to ten minutes after the insertion of the muffle, but may be known by a test-piece put on the end of a long platina wire, and inserted in the muffle, withdrawn, and examined at intervals until fusion has taken place, when the muffle may be allowed to cool, and the facing will be ready to be mounted on the vulcanite or other base. It is better to anneal the piece by allowing the muffle to cool *in* the furnace, or with the double furnace in the annealing or upper portion, as the mineral material is thereby rendered much tougher and more durable.

MUHLBERG says that "if the vitality of a rabbit is lowered by the administration of phosphorus, micrococci, which under other circumstances do no harm, increase so rapidly as to be fatal."

Literary Notices and Selections.

FLAMELESS COMBUSTION.*

By THOMAS FLETCHER, F.C.S., Warrington, England.

THIS matter has apparently created a considerable disturbance in the minds of many. Combustion, or oxidation without flame, with the production of heat, is as old as combustion itself; but its value and the office which flame fills have been overlooked.

In experimenting with burners for cooking apparatus and small laboratory work, my efforts have been turned to the reduction of size of flames, as I had practical proofs that a higher duty was to be obtained from a small flame than from a large one burning the same quantity of gas. Carrying this idea out to as great an extent as possible, I found that under the most perfect conditions the flame would totally disappear, and this invariably happened when the conditions for perfect combustion were fully complied with. The whole matter is so new in its practical form that no great amount of experimenting has yet been done, but it is quite evident that flame and smoke have no connection with combustion, further than an accidental one. If we examine a flame from this point of view, we find that the visible part of it is nothing more nor less than solid matter, which is being heated up by the work done by that part of the fuel which is already burnt; it is made up of solid particles in a state of incandescence, and this incandescence is not combustion.

The part which flame plays is, under certain circumstances, an important and peculiar one, *i.e.* to continue the combustion or chemical combination already commenced by supplying heated matter to make the combination continuous. This appears to be proved by the fact that flame can at any point be cooled down so as to totally stop combustion, simply by putting a cold substance in it, and the fact that flameless combustion instantly ceases on the removal of a heated solid body, such as iron or fire-clay, or on its temperature being sufficiently lowered. The flame, in fact, plays the mechanical part of the action in the absence of other heated solid matter, and no

* Abstract of Lecture before Institute of Mechanical Engineers, Leeds Meeting, August 16th, 1882.

doubt it will be found that combustion is impossible except in the presence of heated solid matter of some kind ; at all events it is so with those substances which only combine at a high temperature. Flame is, in fact, a fuel in an intermediate state between perfect combustion and smoke, and it may either go on to perfect combustion, or degenerate into smoke, according to the conditions present.

If we take gases which contain no solid matter or dust—for instance, pure oxygen and hydrogen—and burn them, we get a flame certainly, but so insignificant that it can be accounted for, probably, by the difference in the refraction of the heated space as compared with the outer air, added to the dust in the air drawn in, and, possibly, other accidental circumstances.

I have, as yet, made no experiments, except with gases or the vapour of petroleum ; but there appears to be no doubt whatever that the same results can be obtained from solid fuel easily, ensuring not only the complete disappearance of the black smoke nuisance, but also perfect combustion of the whole of the fuel instead of the production of poisonous carbonic oxide, which at present appears to be the special aim of most of the smoke consumers now in use. I will show you the consumption of coal gas at the rate of about seventy or eighty cubic feet per hour in this ball of iron wire, and as you will see the iron will fuse easily, with a total absence of a trace of flame. Using this blowpipe will enable you to see the complete transition from a large and comparatively cold flame, which does very little towards heating the wire. As air is added in increasing proportion you will see the temperature gradually rise as the flame becomes smaller, until, by pinching the gas tube for an instant, the flame is extinguished. At the instant of extinction you will see the sudden glare of heat and the instantaneous fusion of the iron, the difference in temperature, with and without flame, being strongly marked, the conditions in other respects remaining precisely the same. I use, as you will see, a foot-blower, because it is desirable to show you an effective experiment quickly, and having no hot chimney stack at hand, a draught must be got by some other means so as to obtain a high temperature.

Where a moderate heat is required, such as an ordinary domestic fire-grate, it is quite possible that this system of combustion is to be obtained in practice without any forced draught, and we may yet come to a clean, flameless, and, of course, smokeless, incandescent fire in our houses.

I select iron wire because it is the easiest to show as a lecture experiment, as both the iron and the coal gas can be

burned ; but I will also do the same thing with lumps of fire-clay, both with coal gas and also with petroleum vapour. An examination of the results shows at once that the combustion takes place by simple contact of the gases with a surface sufficiently hot to cause combination and that flame as flame has no existence. Since the first note on this subject was published, a friend, who is a large brewer, tells me that on drawing the fire from his coppers he has noticed the contents suddenly boil up furiously, and there is a visible glare of heat all over the hot lining of the firehole. This he never could account for until the hint gave him a clue to the fact that the gases from the drawn fuel were burning without flame by simple contact with the red-hot fire bricks.

This leads us to a suggestion for the practical use of a perfect method of burning solid fuels, and, so far as present experiments go, that an open mass of brickwork set like a Siemen's regenerator behind any furnace, between the furnace and the flues, does by its heat ensure the perfect combustion of all gases which come in contact with it, at the same time giving off the heat formed to be utilised in the flues. I believe it will be found totally impossible to pass either smoke or unburnt fuel in any form through an open work screen of fire-brick, provided sufficient air is present for combustion ; and as this screen takes up instantly the heat generated by the combustion, it would keep itself in a state of incandescence exactly in the same manner as the lumps of fire-clay which I will show you. I may mention that this arrangement has been patented.

This leads again to another matter, with regard to steam boilers, that the present system of large flues is a costly blunder. So certain was I of this that my own boiler was made as a simple cylinder without internal flues, the flue underneath built the full size of one half the diameter of the boiler, without return, and with a maximum diameter of flame space of five inches, the bridge being continued the whole length.

This boiler, which, as it stands, was condemned on all sides as a rare coal burner, suitable for a colliery, has proved itself a wonderfully economical one ; and our difficulty has been not to get steam, but to keep the fires low enough to keep the safety valve on its seat. The boiler about corresponds in nominal capacity with the engine, but has never yet been worked to one third its available power. We have never taken the exact coal consumption, as the fuel is used for other purposes, and the firing is done in a wastful haphazard fashion ; the reason being that the coal bills are so small that the matter has never been considered worthy of

attention. It is an exceedingly easy matter to work this boiler without any smoke, but having only one boiler I cannot afford to stop it for my experiments. We have, apparently, to a limited extent, been obtaining some flameless combustion by contact with the fire brick flues.

It is doubtful whether in practice any really good results will be obtained, unless the fuel is first converted into gas, which is an easy matter, and also until a system of inlet is used, which automatically proportions the gas to the air supplied. With these we can, I think, obtain the full theoretical duties in actual work.

Under the present system we produce our heat with the result that the larger proportion of it is thrown away, becoming, after doing the work, so diluted as to be practically useless. There is something here radically wrong, a waste of enormous energy and a waste of fuel stores, which must some time come to an end. We are living on our capital, in the apparent hope that when our fuel stores are used, all creation will be unnecessary—at all events, we do not care what happens.

It is to be hoped long before our fuel stores are exhausted some of our inventors will have discovered what apparently is a simple matter—the re-conversion of low heat into a more concentrated form capable of being again utilised. That this is possible I have not a shadow of doubt. We are already able to concentrate light, mechanical force and electricity, and convert low tensions into high tensions with little loss. Heat up to the present we have failed with, but I believe the failure is simply owing to the incapacity of inventors. That it will come to pass is, I think an absolute certainty, and the great problem now standing before the world of inventors is this. Possibly the solution is daily before our eyes if they were sufficiently open to see it, and it may only require looking for to be found easily; up to the present, apparently, no one has looked for it.

I would offer another suggestion to those who throw most of their heat away, and who have space at disposal. Our climate is, as all are aware, cold and uncertain. We buy at fancy prices fruit, vegetables and flowers, which necessitate the application of artificial heat; and our nurserymen, at great expense and trouble, provide this heat, charging the cost on the result. You will see in connection with mills acres of water exposed to the air to cool—surely there can be no reason why the waste steam and waste heat should not be passed through tanks, and these tanks be built over with glass houses for the production of thousands of tons of costly vegetables and fruit. If a nurseryman got a perfectly steady

heat, under control, in any quantity for nothing, he would be able to supply at a price which would quickly extinguish all competition. Given, the climate under control all the year round, the same space would raise half-a-dozen crops every year of things which always will command a high price. And of you who have mill-dams heated with waste steam could let the upper part of them at a pretty high rent, and those who have waste steam could sell it to nurserymen at a price which would materially increase the profits, provided space is available. With glass houses there is always the advantage that they are almost independent of position, provided light is available. Some of the best and most productive houses are in the heart of towns and chemical manufacturing districts, and this applies more especially to houses worked at high temperatures, where the ventilation is limited. Some manufacturers have in a trifling way utilised a small atom of their waste heat in this way ; but this is nothing—I refer to pines, grapes, winter strawberries, and salads, tomatoes, cucumbers, peaches, melons, and tropical fruits and flowers of all kinds, by the hundreds of tons. Give a nurseryman his heat to any extent for nothing, or at a low price, and he will soon have no competitors ; he will get rich whilst others starve.

You will appreciate the world of applications and inventions which the system of flameless combustion opens out. It is an unexplored mine, probably full of great prizes to those who can see in what direction to experiment. I have been familiar with its existence for years, but the possible value of the matter has only recently received any consideration. Its only practical application up to the present has been in the injector furnace, of which I have one here of the smallest size. It is curious that thousands of these furnaces have been in use for years all over the world, burning coal gas and the lighter petroleums, without flame, and giving most extraordinary results, without the peculiar flameless condition of the inside of the furnace having attracted any serious attention, even from myself, although constantly using it. That extraordinary results are obtained in this furnace, I will prove to you by taking this cold furnace and melting and pouring a crucible full of cast iron so quickly that the casing, although only one inch thick, has not time to get warm outside. That it is not warm I will prove, not only by taking it up in my hands after pouring the metal, but by sticking a lump of tallow on it, which you will see does not fall off. I cannot tell you the time necessary to melt the iron, as I do not know your gas, but I expect it will be five or six minutes. You can take the time yourselves and see the result.—*The Dental Advertiser.*

REMOVAL OF PAROTID GLAND.

By Prof. JAMES E. GARRETSON, M.D.

THE patient, a professional gentleman residing in Colorado, came as a private patient to the hospital with a view to the extirpation of a parotid tumour of such magnitude as (using his own language) rendered life no longer bearable under its presence. The origin of the growth is referred to a sudden sharp crack in the neighbourhood of the ear, heard by the gentlemen as, some few years back, he was sitting at the open window of a car while crossing the Rocky Mountains, and the operation showed the meaning of the sensation to lie in a fracture of the styloid process of the os temporis. Measurement of the morbid enlargement gave four and a half inches vertically, three transversely, and one and a half in thickness. Fixation amounted to almost entire immobility. Diagnosis, fibro-enchondroma.

The operator, having the assistance of Profs. Agnew and Brinton, and of Dr. Hunt, of the Pennsylvania Hospital, commenced the ablation by a first incision extending from the temple to a position upon the neck overlying the space of selection for the ligation of the carotid externus. A second incision extended transversely across the cheek, meeting the first adjacent to the antitragus of the ear. The incisions thus made affording two anterior and one great posterior flap, the tumour was uncovered, the cut below being made of a depth sufficient to expose the carotid, which vessel was lifted and tied. Attempts to dislodge the mass exhibited it as completely filling the zygomatic fossa, and at the same time inseparably connected with the periosteal structure of the maxillary ramus, both upon the external and deep face of the bone; similar relations existing with the mastoid process of the os temporis; the styloid, as suggested, was found fractured. The removal of the growth, which after an hour's labour, was effected by means of much dissection and careful manipulation (the latter particularly demanded on account of the insinuations, or prolongations, of the tumour into the spheno-maxillary fossa), was secured in a manner that admitted of no doubt as to the radical extirpation. After the ligation of the carotid not a single ligature was used, hæmorrhage from the facial being controlled by digital compression at the time of uncovering. The subsequent clinical history of the case is given below.

After the operation the patient presented little or no

evidence of shock, and there was no subsequent tendency to over-reaction, the resulting inflammation being moderate. The first few days following, the patient suffered from the inconvenience associated with a subacute pharyngitis; the secretion of much tenacious mucus, and the rapid accumulation of it, causing him to make repeated and violent efforts for its expulsion, occasioning much increase of the tenderness at the site of the wound, although throughout the entire progress of the case actual pain did not exist. On the fourth day following the ablation of the tumour, it was observed that a small portion of the flap situated immediately in front of the lobe of the ear was sloughing and this was removed with a pair of scissors, thus bringing to view considerable dead tissue immediately underlying it, the separation of which brought to light a bright red granulating surface situated at the bottom of a cavity formed by the separation of the slough, and through which could be easily demonstrated the pulsations of the internal carotid artery, while pressure, being made upon the floor of the cavity, elicited certain peculiar tingling sensations, referred to the course and distribution of the pneumogastric nerve. The cavity now became the receptacle for quantities of pus, which seemed to be drained into it from adjacent tissues. Use of the probe showed the existence of a sinus, which led into a cul-de-sac, evidently situated between the two bodies of the masseter muscle. An incision into this cavity and the introduction of a tent, resulted in its drainage. This procedure was followed by a marked diminution in the amount of suppurative action, and repair went on rapidly and satisfactorily. The ligature around the carotid artery separated on the eighth day without accident.

On the sixteenth day the external condyle of the lower jaw, which had been divested of its periosteum, exfoliated and was removed; several smaller pieces of bone separating later. The local dressing consisted simply in packing the cavity with pieces of sponge saturated in phénol-sodique, compresses being properly adapted to the edges of the wound, and the whole confined with a bandage. The general condition of the patient up to this time was of the most encouraging character. Fever was almost entirely absent during the progress of the case, appetite and digestion remaining excellent.

A few days later a certain degree of stupor became evident, which increased to an alarming extent, and accompanying this lethargic condition was a slight amount of paralysis of sensation and motion on the right side. In spite of all that could be done the coma increased, and owing to the intense

heat and great oppressiveness of the weather, it was considered advisable to send the patient homeward, with the hope that the change might be followed by an improvement in his condition.

On the 11th of June the patient was discharged from the hospital and sent to the home of his friend, Dr. Harris, in Chicago; to whom, had he lived, he would have owed a debt of gratitude it would have been difficult to pay, for the indefatigable attention and care which that gentleman bestowed upon him during his illness in Philadelphia.

A secondary danger that must exist in relation with the removal of a parotid gland is a necessary injury done to the cerebral lymphatic system. In the case of the present patient his death is reported as occurring later in Chicago. A post-mortem examination showed the cause of it to be an abscess that had formed at the base of the brain. The term used by Prof. Garretson as covering the circularity of such a result is "lymphatic stasis."—*The Dental Cosmos*.

THE POISON OF HUMAN SALIVA.

RECENT observations by M. Gautier (communicated to the Paris Académie de Médecine) afford reason for believing that the poison of serpents differs from human saliva in the intensity of its effects rather than in essential nature, so that the fears with which a human bite is often regarded may not be wholly unreasonable. M. Gautier took some twenty grammes of human saliva, and, after lixiviating and purifying, obtained a substance which, injected in the form of solution under the skin of a bird, had remarkable toxical effects. Almost immediately the bird was seized with trembling. It staggered and fell to the ground in a state of coma and complete stupor, terminated by death in half an hour or an hour, according to the dose injected and the vigour of the bird. The phenomena resembled fully those produced by the bite of a venomous serpent. The poisonous matter of the saliva is thought to be an alkaloid similar to the cadaveric poisons called *ptomaines*, which MM. Brouardel and Boutmy have isolated. Like them, it produces Prussian blue when mixed with ferrocyanide of potassium. The facts stated throw some light on the question of virulent maladies. The present case, it is pointed out, is not that of a true

virus: for at high temperature a virus is destroyed, but when the salivary alkaloid is heated to more than 100° its poisonous property is not affected. M. Gautier studied comparatively the poison of the cobra (one of the most formidable of Indian serpents). This injected in a dose of one milligram in a quarter of a cubic centimètre of water, under the skin of a small bird, such as chaffinch or a sparrow, kills it in five to twelve minutes. One observes torpor and coma, then a period of excitation, with convulsions and tetanic contraction. In connection with the subject, a correspondent of 'La Nature' calls attention to a passage of Rabelais in which the poisonous nature of human saliva is recognised.—*Adolph G. Vogeler, in Scientific American.*

FROM CARTILAGE TO BONE, AS SEEN BY THE MICROSCOPE.

By JOHN H. LOBDELL, M.D.,

PROFESSOR OF HISTOLOGY, MICHIGAN COLLEGE OF MEDICINE.

THE change from cartilage to bone is a process which is understood, and I may say studied, by very few physicians and surgeons of this country.

It is a process of much importance, as it begins in the embryo and ends only when death ends every function of the body. There was no close study of the change until within the present century, and then, owing to their poor facilities, the study was incomplete, and some of the most important conclusions erroneous.

It is only within a few years that the correct conclusions have been arrived at. For many years those studying developing bone, owing to their poor facilities, supposed that cartilage cells became directly transformed into bone cells; but this is not the case. I will, I think, safely say that the cartilage cell directly has nothing to do with the formation of the bone cell. The bone cell is an independent formation, owing, as I have said, nothing to the cartilage cell. I will make my paper of as few words as possible covering the subject.

The first step of the change is the development of small capillaries and blood-vessels within the substance of the cartilage. Now begins the breaking down of the cartilage

substance and cells. Owing to the metamorphosis of the melting cells, we have formed blood globules, fat cells, marrow cells, connective-tissue cells, pus cells, &c. The points of development of the blood-vessels appear as small, round, reddish masses, but under the microscope these masses are found to be the blood-vessels filled with reddish-brown cells, destined to take an active part in the formation of bone substance. By careful observation with high power small cavities are found within the ruptured cartilage capsules, lined with small cells resembling epithelium. These are, or are to become, the so-called osteoblasts. It is from these osteoblasts that the deposition of the basis substance of the bone tissue takes place, in an outward direction.

By more careful examination cells of the osteoblast may be seen pushing their way in the cartilage substance to become centres of ossification. That bone cells are found within ruptured cartilage capsules is a settled fact, and here arises the question as to the unruptured having within themselves bone cells. I hope that at no late day this question will be settled. I have made a careful study of the subject, and have never seen the cells in unruptured capsules. After the bone cells enter the cartilage substance the development continues as in other tissues of the body.

The study is an undertaking which requires much hard work, and is accompanied by many failures, which necessitate the repetition of many parts of the work. One discouraging feature of the work is the fact that no permanent mountings can be made.—*The Microscope*.

Dental News.

NOTICE TO SUBSCRIBERS.

It is requested that all subscribers who have not already sent their subscriptions for the present year for the 'British Journal of Dental Science,' will oblige by doing so forthwith to J. P. Segg, Publisher, 82, Mortimer Street, Regent Street, W.

ODONTO-CHIRURGICAL SOCIETY.

THE Annual Meeting of the above Society will be held at 30, Chandos Street, Edinburgh, on Tuesday, March 13th, at 11 a.m.

Also at the same address, the First Annual Meeting of the Scottish Branch of the British Dental Association at 2 p.m., both under the presidency of Dr. Smith, F.R.C.S. Ed.

The evening will be devoted to the Dinner, which will take place at the Balmoral Hotel, Prince's Street, Edinburgh, at 6 o'clock, W. Bowman Macleod, Esq., L.D.S., in the Chair.

The company will consist of members of the above bodies and the licentiates in Dental Surgery. It is requested that application be made at once for dinner tickets, which the Secretary will forward, the cost to be one guinea each.

VACANCY.

NATIONAL DENTAL HOSPITAL.—House Surgeon. Salary £50 per annum. Applications by March 31st.

ROYAL COLLEGE OF SURGEONS, EDINBURGH.

MR. ADOLPHE WETZEL, of Baden, Switzerland, passed his first professional examination for the license in Dental Surgery on 23rd of January.

MESSRS. FRANK HERBERT BRIGGS, of Leeds, and FRANCIS BROMLEY, of London, passed their final examination and were admitted L.D.S. on 25th of January.

APPOINTMENTS.

MR. E. BARTLETT, M.R.C.S., has been appointed Hon. Dental Surgeon to the Western General Dispensary, *vice* Willoughby Weiss, resigned.

MR. W. C. STORER BENNETT, F.R.C.S. and L.D.S. Eng., has been appointed Dental Surgeon to the Middlesex Hospital *vice* J. S. Turner, M.R.C.S., L.D.S. Eng., resigned.

MR. MORETON SMALE, M.R.C.S. and L.D.S. Eng., has been appointed Second Dental Surgeon to the Westminster Hospital.

Correspondence.

[We do not hold ourselves responsible for the opinions expressed by our Correspondents.]

CAPE COLONY, SOUTH AFRICA.

To the Editor of the 'British Journal of Dental Science.'

SIR,—As most of our Colonial Dentists subscribe to your journal—which I have taken for over twelve years—I take the liberty of appealing to them through the medium of your columns in the hope that those interested may see this.

Since 1879 the Colonial Government has recognised our profession, having granted the first license to practise Dental Surgery to Jas. Bell, Esq., L.D.S. Eng., 1860, of this city. At that time very little was known about "Dental politics," now I am happy to say that, with the exception of two, every qualified and registered Dentist has been gazetted to practise Dental Surgery in this colony.

As we are very anxious to keep a correct list of the names and addresses of every licensed colonial Dentist—an official list of which is published every six months in the 'Government Gazette'—I shall be glad if those gentlemen who do not see the bi-annual publication will send me their full name and post-office address, so that I can get any mistakes or change of residence altered, being close to headquarters (the Colonial Office).

By having the correct address (in the official list) of every licensed Dentist in the Colony, it is found to be of great

convenience for those of the profession who are seeking for an engagement as assistant, &c.

In any case, I shall be obliged if practitioners at a distance from the metropolis will send me their temporary or permanent post-office address, as the present list does not afford authentic information regarding addresses. I promise those who do so to send them the official list when published, giving their proper postal addresses.

As there are but a few L.D.S.'s in the Colony it would be invidious to make distinctions as regards qualification as the old-established practitioners are men of good calibre and anxious to carry out the principles of the Dentists Act.

I am, &c.,

BERKS T. HUTCHINSON, L.D.S.

2, New Street, Cape Town;
Jan. 16, 1883.

Obituary.

MARSHAL H. WEBB, D.D.S.

By the death of Dr. Webb the continent of America has lost one of its greatest workers in operative Dentistry, and the world a man who was ever ready with some new idea which would wrestle with the ravages of Dental caries. He was born on October 28th, 1844, at Marlborough, Chester, Co. Pa, and at the age of seventeen became a pupil of Dr. Frank Hickman, where he displayed exceptional ability both in the theoretical and practical work of his calling. By a determination that all he attempted should be as thorough as possible he soon became known, and the establishment of a large practice soon followed. His connection with the chief learned societies in the States gave an opportunity for the display of his knowledge in Dental histology, and it cannot be said that anything he advocated was not the result of careful thought.

Our personal acquaintance with Dr. Webb was made at the International Medical Congress held in London last year, and it is with deep regret that we have to pen these lines on a man so full of promise and one who had not reached the age of forty summers.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 82, Mortimer Street, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
3. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
4. All communications relative to subscriptions and advertisements are to be addressed to the Publisher, Mr. J. P. Segg, 82, Mortimer Street, Regent Street, London, W.
5. The Journal will be supplied direct from the office on PREPAYMENT of subscriptions as under:

Twelve Months (post free) 14s. 0d.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skliros, 82, Mortimer Street, Regent Street, W. A single number sent on receipt of seven (penny) stamps.

ANSWERS TO CORRESPONDENTS.

THE TRUTH (Cape Town).—We shall take the opportunity to refer to the subject.

Communications have been received from Messrs. Berks T. Hutchinson (Cape Town), W. Bowman Macleod (Edinburgh), Newland Pedley (London), W. Harrison (London), G. W. Rutterford (London), Secretary National Dental Hospital (London), H. J. Alexander (London).

BOOKS AND PAPERS RECEIVED.

‘Lancet.’ ‘Medical Times and Gazette.’ ‘The Alloa Journal.’ ‘Pharmaceutical Journal.’ ‘Chemist and Druggist.’ ‘New England Journal of Dentistry.’ ‘L’Odontologie.’ ‘British Medical Journal.’ ‘The Evening Citizen.’ ‘Cape Times.’ ‘The Dental Advertiser.’ ‘Transactions of the Illinois State Dental Society.’ ‘Ohio State Journal.’ ‘Archives of Medicine.’ ‘Evening Standard.’ ‘Medical Register,’ 1883. ‘Dental Register,’ 1883.

NOTICE.—We desire that it may be clearly understood that our pages are open to all for free expression of their views on matters connected with our profession. We only ask for terseness of expression and MODERATION IN TONE.

When otherwise unobjectionable, difference of political or other opinion will never be regarded by the Editor as a disqualification for the admission of any communication to the pages of the BRITISH JOURNAL OF DENTAL SCIENCE.

British Journal of Dental Science.

No. 364.

LONDON, MARCH 15, 1883.

VOL. XXVI.

INAUGURAL ADDRESS DELIVERED BEFORE THE ODONTOLOGICAL SOCIETY.

By Dr. JOSEPH WALKER.

GENTLEMEN,—Before I enter upon the main subject of my address I should wish to explain, as briefly as possible, how I come to occupy this chair to-night. Most of those present are aware that in 1873, Mr. Coleman suggested the advisability of re-electing some of our former Presidents once more to rule over the Society: the proposition met with general approval, and in 1875, Mr. Vasey having declined to accept the office that year, Mr. John Tomes was unanimously elected to serve a second time as President. Since then the chair has been occupied every alternate year by one of the earlier Presidents of our Society, and to-night Mr. Ibbetson should be engaging your attention with an address from his master mind, had not affliction of the deepest nature prevented him from occupying so honorable a position.

Mr. Parkinson, our worthy Treasurer, would, in the ordinary course, follow Mr. Ibbetson, but he has also declined to serve his second term of office this year, consistently acting up to his principles that circulation, free circulation, is the life vigour of institutions such as ours, and that new blood should be introduced as liberally as possible into all the offices of the Society.

Your Council therefore nominated me, and you have ratified my election by your unanimous vote. I need hardly tell you how highly I esteem this evidence of your consideration. Still I hesitated long before I accepted the position I hold to-night. I cannot lay claim to any of the attributes which my friend Mr. Coleman considers a man should possess in order to be entitled to a seat in this chair as your President. Mr. Coleman, when he first proposed the re-election of former Presidents, gave utterance to the following sentiments:

“The President of a learned Society like ours should, I conceive, be one who has been largely instrumental in extending the bounds of the science which the Society he presides over was founded to develop; his name should be known beyond a narrow circle of his own profession; mere interest in the Society, with success in practice, should be no passport to that seat of honour. The true success of a Society such as ours is evinced more by the status of the Executive, and especially of that of him who presides over it, rather than by the numbers of its members.”

Gentlemen, I cannot point to any original investigations, undertaken or carried through. The only work I can recall with pleasure is that I have been for many years a teacher in two medical schools, and have endeavoured, to the best of my ability, to make use of our accumulated store of knowledge, and, by example and diligence in teaching, to stimulate others to work for the love of work, hoping that such seeds may propagate in bigger brains than mine. All that I can offer you to-night is that I will, to the utmost of my ability, uphold the dignity of this Society, and advance its interests in every way open to me.

Having said this much by way of preface, I have now to turn to the more serious business of my address. And here, as I looked over the varied utterances of my predecessors, my difficulties appeared at first almost insurmountable. Successive Presidents have, in their turn, dwelt on the formation and early history of our Society—on its objects, usefulness, progress, financial position, and successes. What is there left unsaid that I can hope will interest you? My difficulty is increased by the fact that I follow such an acknowledged leader in Dental politics and Dental literature as our late President, Mr. Samuel Lee Rymer. To him we are much indebted,—how much is only known to a few. He has been all through life an original thinker, a strong reformer, a most enthusiastic worker. In every movement for the advancement of Dental education, or for the progress of the profession, he has been foremost, helping not only with advice and monetary assistance, but giving valuable time and personal attention to details. In following him I have indeed no easy task.

As in many of these Presidential Addresses a retrospective line has been adopted, I shall to-night dwell more particularly upon the work that lies before us, and consider how in my opinion we can best advance the interests of the profession and of the Society in the future.

Yet may our interest in the present and our schemes for the future never cause us to forget the debt of gratitude which

we owe to the founders of this Society. We should ever venerate the names of Parkinson, Cartwright, Tomes, Harrison, Rogers, Ibbetson, Biggs, and the rest. I was a junior member of the profession in those days, yet I well remember the solicitude of those men for the success of our earliest meetings. It was a noble work for such men to make common property of knowledge which they had taken years to acquire, and to impart willingly all they knew for the benefit of those who had hitherto been too often looked upon rather in the light of unfriendly rivals. Minds capable of such abnegation must always deserve our warmest appreciation. The free participation of sound knowledge was the groundwork and basis of this Society, and the same willingness to impart must be maintained by its members of the present day, if it is to continue a healthy, vigorous, scientific existence.

I must not omit also to congratulate you on the fact that the Odontological has at last taken up its proper position in the ranks of the medical societies. It was with the deepest interest that I proposed in the council chamber the rule that in future all new members must possess a qualification satisfactory to the Council. To me this is a natural outcome of the Dentists Act. The rule must, moreover, produce in time a beneficial effect by raising the scientific character of the Society. Our new members, trained to the investigation of scientific facts, will bring a clearer intelligence to bear upon the communications set before them, and will be able more readily to deduce from them all that promises to be profitable and interesting, and to reject that which is false or valueless. It rests with us to make our meetings sufficiently interesting and instructive as to induce all the young men now passing into the profession to become members, and to continue their education within the sphere of the Society.

I will, in the next place, take advantage of this opportunity in order to say a few words with reference to a department of the work of the Society with which I have for several years past been actively concerned—I mean the editing and publication of the 'Transactions.' My predecessor, in the course of the address delivered at our last meeting, referred to the apparent delay in issuing these records of our proceedings, and suggested that arrangements might be made by which each number might be posted to members within ten days after the meeting. No member would be more pleased than myself if this could be achieved. It is, in fact, a matter which has constantly engaged my attention. The delay is due partly to the fact that, in order to secure

accuracy, a transcript of the reporter's notes is sent to each of the principal speakers in the discussions; and although these gentlemen are particularly enjoined to return the MS. without delay, it seldom happens that the request is strictly complied with by all of them. And another cause of delay is that the papers are not unfrequently brought here to be read whilst still in an unfinished state, and are then either taken home by the author for the purpose of completion or correction, or else the proof which is sent to him is detained for a considerable time in order to carry out the necessary process of revision.

In order to obviate the first mentioned source of delay I have to-night suggested to the Council the adoption of the plan followed at the International Medical Congress, viz. that each speaker should write out his remarks immediately on resuming his seat, and should hand these memoranda to the Secretary before leaving the meeting. Whilst as to the second cause, we have a means ready to hand, if only duly enforced, which would not only greatly accelerate the issue of the 'Transactions,' but would also go far to secure that all papers read before the Society shall be in all respects worthy of its consideration. I would remind you of the fact that a Publishing Committee is appointed each February by the Council, and also of the existence of the following Rule :

"RULE 45.—They shall, at their first meeting after the Annual General Meeting, in January, appoint the Library Committee, a Committee to examine the specimens presented for exhibition, and a Committee to report on the merits of communications made to the Society with a view to publication."

Amongst the questions which must before long engage the attention of our Council, one of the most important is that relating to the present condition of the Society's finances. Thanks to the careful management of our present worthy Treasurer and his predecessors, the Society now possesses invested capital amounting to over £2,000; whilst for some years past, notwithstanding a tolerably liberal expenditure on our Museum and Library, there has been an average annual excess of receipts over expenditure of about £100. There appears to be a pretty general opinion amongst our members that, for a Society constituted as ours is, the balance we now possess is amply sufficient, that the interest of this accumulated fund might now be safely applied to the advancement of scientific and technical knowledge, and that steps might now be taken to make our expenditure more nearly balance our receipts without in any way impairing the stability of our financial resources.

I am aware that this question has for some time past been a frequent subject of private conversation amongst members of the Society, and no doubt others besides myself have arrived at conclusions more or less satisfactory to themselves, as to what it would be best to do under the circumstances. In making, therefore, the following suggestions, I need scarcely say that I put them forward merely as suggestions, knowing that the whole matter will be most carefully and exhaustively discussed by the Council, with the able assistance of the Treasurer, and that any propositions bearing upon the question will be gladly received and duly attended to.

It has been suggested that we should reduce our subscription from two guineas to one guinea annually. I cannot myself see that such a change is in any way necessary or advisable. On the other hand, I think that there are several ways in which we might, with great benefit to ourselves individually, and with advantage to the Society's reputation, make our expenditure more nearly equal our receipts.

In the first place, after giving the matter my careful consideration, I would suggest that we might, with great advantage to ourselves, introduce a new element into the constitution of the Society by appointing, either annually or biennially, a Travelling Fellow. The appointment should carry with it a sum sufficient to enable the holder of it to visit the more advanced continental schools of Dental Surgery or of practical chemistry, or to extend his travels to the great American continent, gathering from all departments of science such information as may conduce to the advancement of our professional knowledge or the improvement of our technical appliances. The gentleman chosen for this office should, at the time of accepting the appointment, undertake to make a written report to the Society of the results of his observations and experiences, to be read at one of our monthly meetings specially set apart for that purpose. He should also undertake to give a clinical demonstration at our June meeting. The Travelling Fellow should be elected by ballot at our Annual Meeting, the names of those to be balloted for having been selected by the Council from amongst the most highly distinguished and best qualified members of the Society.

A plan similar to that which I have suggested is already in operation at Oxford, known as the "Radcliff Travelling Fellowship," three fellowships of £200, tenable for three years; full particulars are given in the 'Oxford University Calendar,' page 49. At Cambridge a "Travelling Bachelor," founded by Wort; £100 a year for two young Bachelors of

Art; particulars in 'Cambridge University Calendar,' page 298. In the army and navy, and in some of our literary societies, and most valuable results have frequently been obtained by its means. The prospect of gaining such an appointment would be a powerful stimulus to the students of our various Dental schools. It would, I feel sure, be esteemed as one of the highest prizes in the gift of our body; and that this scheme, if well carried out, would also be one of the best means of maintaining the prosperity of the Odontological Society.

I have mentioned, as one of the conditions to be attached to the Travelling Fellowship, that the holder of it should agree to give a clinical demonstration at our June meeting, and this leads up to another suggestion which I would put forward for the consideration of the Council. I would suggest a change in the character of that meeting. I would ask the Council to consider whether it would be practicable, and also advisable, with the kind co-operation of the managing committee and medical officers of our Dental School, to hold once each year a "clinic." Should the Council consider it wise to hold such a meeting, I have received the promises of several eminent members of the profession, who would be willing to take chairs and to demonstrate their manipulative skill in some carefully selected Dental operation. With your approval I would also offer from this chair a prize of twenty-five guineas to the most skilful and scientific operator in gold filling. Mr. Chas. Tomes, Mr. Claude Rogers, and Mr. Robert Hepburn have kindly consented to act as umpires in this matter. This competition would take place at such a time and under such conditions as may be found most convenient to those concerned, our object being that the competitors shall be taken from as wide a field as possible, it being, however, understood that the successful competitor shall be willing to take part at our June clinic.

I believe that this clinical evening would be found greatly to interest the general body of Dental practitioners. It would also, I trust, lead them to realise more clearly the fact that however proficient as an operator the student may be when he leaves the hospital, the advances made by Dental Surgery are so rapid in our day that unless he is unusually quick in availing himself of every chance of improvement, he will at the end of a very few years find himself altogether behind the times. I am sure that it would well repay a large number of practising Dental surgeons, both London and provincial, if they could get the managing committees of the various Dental schools to grant them the privileges of

a life subscription, so that whenever they are in a town with a Dental school, they may have the right of entry to see and learn whatever may be new to them, and thus be enabled to keep abreast of the times in general professional knowledge, and especially in good practical work.

At all our large general hospitals one day in the week is set apart as an "operation day;" a list of the operations to be performed, with the surgeons' names attached, is advertised beforehand, and it is the practice to admit any qualified surgeon on presentation of his card, to see the operations from the theatre gallery. This enables men engaged in practice to see the most skilled operators treat either slight or difficult cases. The Cottage Hospitals, also, in rural districts have proved of the greatest possible benefit, not only to the poor, but to the surgeons themselves, who operate in each other's presence, assisted frequently by fellow-practitioners belonging to the same district; and thus a most desirable spirit of emulation is produced, which has raised the capabilities of the general surgeon to a point unknown in former times.

It would be a great inducement to members of our profession to continue their education from time to time as opportunities offered themselves, if the authorities of our Dental schools would follow the custom of the general medical schools, and would subdivide the fees for hospital attendance and for the various courses of lectures. An extract from the prospectus of St. Thomas's Hospital Medical College will illustrate my meaning fully. It informs us that "the winter session commences on October 1st, the summer session on May 1st. Students can enter at the commencement of either session." The fees may be paid in one sum, or by instalments, or special entries may be made for separate courses of lectures or departments of hospital practice. Special arrangements are made for students entering in their second or subsequent years, also for Dental students. Qualified practitioners can obtain perpetual tickets on payment of a small fee, &c. And it is not only the general hospitals that do this; it will be found on inquiry that the various special hospitals are almost equally accommodating. Even some amongst Dental schools carry out this idea to some extent,—*e.g.* at National Dental Hospital, and also, I believe, at Glasgow practitioners are admitted to special courses of lectures and to hospital practice.

A policy of this kind on the part of our Dental schools would certainly increase the interest taken in them by the profession at large; whilst the occasional presence of a practitioner as a member of the class would stimulate both medical

officers and students to show themselves at their best, and would put everybody on his mettle.

I have purposely refrained from entering upon any financial or other details connected with the schemes I have submitted to your notice, but should the funds of the Society permit there are yet other ways in which they could be most profitably disposed of. For instance an annual prize might be offered for the best essay on such subjects as "The Cause of Dental Caries," "The Best means of subduing Subacute Inflammation of the Mucous Membrane," "The Causes of Erosion of the Enamel," &c., &c.

But I have occupied quite enough of your time and am much obliged to you for the kind attention with which you have listened to my remarks and suggestions. I hope that as the session advances some promises from old friends will be redeemed, and that we may have the pleasure of listening to papers by Messrs. Macnamara, Charters White, Coleman, Henry Power, Dr. Thorowgood, and Mr. Sewill.

Mr. Edwin Saunders, in proposing thanks to Mr. Woodhouse for the zeal and ability he had shown in the chair, expressed what, according to his own idea, an ideal President should be:—"He should be patient and forbearing in the execution of his duties, tolerant of others' opinions, and not too persistent in his own; he should be sparing of speech, and when he did take part in the discussion his words should be genial and suggestive, calculated to elicit the opinion of others; he should also be thoroughly impartial, giving both sides an equal hearing, and not given to force his own opinions on the meeting."

Gentlemen, I hope to follow the lines of Mr. Saunders' ideal President, and I trust that each member will, on his part, give his cordial assistance to the Chair, and thus help to make my year of office as President a pleasurable one.

INAUGURAL ADDRESS.*

By STORER BENNETT, F.R.C.S., L.D.S. Eng.

GENTLEMEN,—I beg to thank you for the honour you have done me in electing me your president for the ensuing year.

* Read before the Students' Society of the Dental Hospital of London, February 12th, 1883.

While assuring you of the interest I have always taken in the welfare of this Society, I may mention that I was one of its earliest members, being indeed on the Council at the time of its formation. You may, therefore, guess the pleasure it has afforded me to watch the steady progress it has made from that time to the present, both in the number of its members and the character of its work.

I would, however, venture to suggest that the aim of some of its papers has appeared to me a little too exalted; in a student's society all the members should enter heartily into the discussions; for it is in frequent public speaking that they derive such great advantage, which is effectually frustrated when the paper of the evening is of such a nature that those who hear it are unable to criticise its merits.

It is not my intention to inflict on you a long address, but I gladly avail myself of the present opportunity of saying a few words on a subject which is just now occupying the attention of medical men, I refer to the collective investigation of disease. In an address read before the British Medical Association a short time since, Sir William Gull set forth the objects and advantages of such investigations carried on by large numbers of our busy practitioners in all parts of the country, and in the varied ranks of society in which their work may lie.

At present the bulk of investigation is carried on by trained experts, and to a large extent in hospitals, where the cases are not seen till the disease is far advanced, no exact and reliable family history is to be obtained, and the early symptoms of the disease are either vaguely and incorrectly reported by the friends and patient, or they have already passed into the realms of the forgotten. Of the history of other and similar attacks, or of bygone illnesses of a different nature, but scant and often conflicting accounts are given, so that little that is trustworthy can be learned as to antecedent influences which were at work long ere the disease assumed its present characters. The result of treatment in these cases is frequently unsatisfactory, for the patient either seeks advice too late for medical skill to be of much avail to him, or he passes from observation and his subsequent history is unknown; the record of the disease is, therefore, untrustworthy in the beginning and incomplete in its ending.

Morbid anatomy as seen in the post-mortem room shows the final results of pathological processes, though their early history is but little elucidated by the examination of such specimens. Towards their close many processes are identical which were widely different in their commencement, and to

understand disease aright we must know its earliest characters, its progress and results.

The general practitioner has under his care families from their earliest childhood, and thus has opportunities of observing the surroundings of his patients, and the earliest symptoms of disease in a manner impossible with hospital physicians and surgeons.

Were accurate records of cases made and forwarded to a central committee for reference and comparison, a mass of information would be collected of whose value we can at present form no just estimate, but for correcting erroneous impressions and showing the real merit of true ones it would stand unrivalled.

Much is already known concerning many maladies, but we must admit that there is still much that is veiled in obscurity and doubt, and it will occur to every observant practitioner to note slight incidents, trifling in themselves perhaps, and of whose value he forms but a lowly estimate, but these when recorded and compared with others assume an importance of which their author never dreamed. Facts oft assume a new significance when thus compared with one another.

As in the highly wrought mosaic, each tiny stone, though intrinsically of trifling worth either for its shape or colour, assumes when deftly fitted to its proper place a value far beyond its proper due, for it helps to complete the picture which was incomplete before, so it is in medicine, a true picture of disease can only be obtained by the collection and comparison of multitudes of observations called from various sources and the minds of many men.

And could the "life history" of our patients be recorded for easy reference we should possess an aid to diagnosis in the knowledge of antecedent maladies, and the course that they have run which would be of infinite assistance in the formation of our judgment of a present illness, as regards its nature, future course and termination.

It has been suggested by the authors of this scheme of collective investigation, that cards with well-considered questions bearing on various points of interest in different diseases be circulated amongst the members of the profession, that concise replies be given as opportunity occurs, and that these be returned to a central committee from time to time for comparison and registration. And as evidence accumulates, the results of these investigations be published by the committee.

As an instance of the value of such a system in our own special branch of surgery, I would draw your attention to

an admirable paper read at the annual meeting of the British Dental Association last year by Mr. Charles Tomes, in which the presence of micro-organisms in devitalised dental pulps is discussed at some length, but the author there admits that the evidence in his possession is at present incomplete, and that for the satisfactory elucidation of the subject various observers are desirable.

If, in this instance, questions, such as those suggested, were circulated among us, the attention of a large body of observers would be readily attracted and a strong consensus of opinion in time be obtained.

The habit of observation when once acquired becomes as second nature, and an insight into the mystery of Nature's workings is obtained (we scarce know when or how) which amply repays us for the care and time we may bestow in the acquiring.

But, while counselling you to record, do not suppose I would urge you to that vulgar habit of rushing into print; our literature is already flooded with too much that is written, not because the author has that to impart which is worth the writing, but merely to gratify the vanity of him who writes.

Remember the work of the immortal Jenner. For thirty years he noted and reflected on the results of vaccine inoculation ere he was sufficiently convinced of the truth of his observations to publish them to the world at large.

In all you do be thorough! Jump not at conclusions ere your premises are certain. Seek knowledge for its own sake, and scorn not the small things of daily life. Sir James Paget paid a fitting tribute when he said of Darwin, "He had the rare power of taking the common things that other men waste, and out of them making the grandest materials of scientific work. So that it is in vain to say, 'I have no opportunity of scientific inquiry; I cannot investigate this; I can contribute nothing to that which I see the scientific members of the profession are doing.' It requires merely the opportunity of a practice in the country, and the mind and resolution of Darwin, to bring great pathological conclusions out of the most ordinary facts of daily life in general practice."

From a dull routine our work is raised to a positive delight when it becomes the field for observation, comparison and reflection; and while science is enriched by each new truth discovered or confirmed, the mind of the observer is strengthened in the progress, and life itself acquires an interest unknown to him who cares not to observe the method of Nature's working.

The social prizes in professions are few and far between,

and they fall not to the lot of the majority of its members, but each one has it in his power by diligent self culture and constant observation, to gain for himself a prize incomparably beyond that which society can offer, and he at least proves his fitness for whatever honours and distinctions a discriminating community may see fit to bestow upon him.

In conclusion I would remind you of those noble words of Addison:

“ ’Tis not in mortals to command success,
 “ But we’ll do more, Sempronius, we’ll deserve it.”

CYSTIC TUMOURS OF THE JAWS, AND THE ETIOLOGY OF TUMOURS.*

By F. S. EVE, F.R.C.S.,

ERASMUS WILSON LECTURER AND PATHOLOGICAL CURATOR OF THE MUSEUM
 OF THE COLLEGE, AND SURGICAL REGISTRAR TO
 ST. BARTHOLOMEW’S HOSPITAL.

(*Concluded from p. 203.*)

DUPUYTREN, Tellander, and Tomes, have placed on record cases in which extraordinary numbers of irregular ill-formed dentary bodies were found within a single cyst. These, in Tellander’s case, were twenty-eight in number, and presented the usual characters of supernumerary teeth. Such cysts as these and that described by Barnes are doubtless analogous to the dermoid cysts of the skin, ovary, &c.

Cysts in the jaws have been observed, containing no tooth, but filled with layers of a fibrous appearance, sometimes free and floating in the liquid, more often adherent upon a point of the wall. (Magitôt.)

The existence of these cysts not containing teeth led Magitôt to divide the follicular cysts into three varieties.

1. Cysts developed during the early or embryonic period of the development of a tooth, before the formation of dentine and enamel.

2. Cysts corresponding to a period when the first rudiments of a crown have appeared in the follicle. To these he gives the name of odonto plastic cysts.

3. Cysts of the coronary period, viz. cysts containing fully developed crowns of teeth, and corresponding to our dentigerous cysts. These have already been described.

* Lecture delivered at the Royal College of Surgeons of England.

One specimen in the College Museum (No. 194), is perhaps, a cyst developed in the embryonic period; for I am quite at a loss otherwise to explain its pathogeny, it being certainly not dermoid. It consists of the right side of the body of a lower jaw completely and uniformly dilated into a large spherical cyst with very thin bony walls. No tooth or rudiment of a tooth can be discovered in the cyst and its inner surface is lined with a thick soft membrane, thrown into folds. This lining is composed of small round epithelial cells. The condition of the teeth before the removal of the tumour is not mentioned. The patient was a woman, aged 35 years; the tumour had been growing for three years, and contained a thick dark fluid.

The odonto-plastic cysts—those of the second variety—are said to contain “hard grains, rounded and mamillated, or disposed in osseous-plates applied and fixed upon a point of the wall”; these were found in one case to be composed of an osseous base covered with traces of dentine, which was again, in places, invested with enamel. Magitôt quotes a case of Broca’s as an instance of this variety.

The same authority states that all the follicular or dentigerous cysts have a lining composed of two or three layers of polyhedral epithelial cells; this epithelial lining he regarded as a new formation, since “it has no equivalent in the wall of the normal tooth follicle.” He also observes that epithelial cells are found in the fluid contents of these cysts.

Very few pathologists will be disposed to admit the possibility of the formation of an epithelial lining *de novo*, and I have examined three specimens of dentigerous cysts carefully with regard to this point, and find no trace of an epithelial lining. The minute structure of the wall was, in each case, precisely similar, consisting of fibrillar tissue containing granulation cells, which were more closely aggregated on the inner surface of the cysts. I think, therefore, that Magitôt is mistaken on this point.

The existence, or non-existence, of an epithelial lining to these cysts is not merely an anatomical detail, but a question of the first importance in considering their mode of origin.

If the view generally accepted with regard to the origin of dentigerous cysts be correct, we should not expect to find an epithelial lining to the cyst, as it is supposed that the accumulation of fluid takes place between the enamel and the tooth capsule.

In discussing this question, Mr. Tomes (‘Dental Surgery,’ pp. 625, 626) mentions that vesicular enlargements, containing serous fluid, are occasionally found over teeth about to penetrate the gums. “On incising this enlargement, the

knife comes down on the enamel-coated covering of the coming tooth." Again, he says, "When the development of the enamel is completed, its outer surface becomes completely detached from the investing soft tissue, and a small amount of transparent fluid collects in the interval so formed." In these facts he finds "an explanation of the manner in which buried cysts arise; namely, by the gradual collection of fluid between the enamel and the tooth capsule."

This theory completely coincides with the minute structure of the lining of the dentigerous cysts, but is not equally satisfactory when applied to cysts formed in an earlier period of development. The enamel organ would not then be separated from the surrounding connective tissue; and, further, the physiological explanation for the accumulation of fluid between the enamel and the tooth-sac is wanting.

A simple explanation of the origin of the cysts of the embryonic and odontoplastic periods suggests itself in the supposition, that they are due to accumulation of fluid within and distension of the enamel organ itself, owing to an exaggeration of the degenerative process by which the cells in its centre are destroyed.

This theory would explain the existence of an epithelial lining in unilocular cysts not containing teeth, as in the specimen (2194) from the Collège Museum.

The diagnosis between follicular cysts and solid tumours is usually easily made. Almost invariably one surface of the cyst is sufficiently thin in some places to admit of compression, when the characteristic diagnostic sign is obtained, known as the "crackling of parchment."

The diagnosis may be further facilitated by the absence of this shell at certain points, where fluctuation can be obtained. A puncture would, in doubtful cases, afford a certain test.

The dentition although important, is, as Mr. Heath points out, not to be relied on as a diagnostic sign. So many variations in the number of teeth from congenital deficiency are met with, that the absence of one does not necessarily imply that it is misplaced.

The diagnosis between a follicular cyst and a multilocular cystic tumour would, I apprehend, in certain cases present considerable difficulties. The lobulation in the latter disease from the presence of numerous cysts, the incompleteness of its osseous covering, and the presence of fluctuation at several points, would afford valuable aid to diagnosis.

Exploratory puncture would, in the case of the multilocular cystic tumour, give exit to either a colloid, or a brownish serous fluid in different parts of the same tumour, whereas

the fluid within the follicular cyst is usually clear and serous.

Periosteal cysts.—Another variety of cyst connected with the tooth requires a short notice. Not unfrequently cysts of small size are found attached to the apex of a fang of an extracted tooth. They sometimes cause excessive pain from pressure on the nerve. The cysts are, as a rule, not larger than a pea, but may attain half an inch in diameter. They lie beneath the periosteum of the fang, and from this circumstance, have been named periosteal cysts. The apex of the fang on which they are situated is frequently absorbed, and, by the introduction of a probe after puncture, the fang is found exposed within the cyst cavity. The contained fluid is rich in cholesterine. Mr. Tomes (op. cit.) considers that, in the first instance, the morbid process is, probably, identical with that resulting in the formation of an alveolar abscess; but, being less acute, a serous cyst is formed instead of a suppurating sac. The microscopic appearances of four specimens that I have examined bear out this view. The sections were made through the hardened wall, and, in some instances, through the dried contents of the cyst. The cyst-walls were composed of fibrillar and granulation tissue, and their cavities contained a cheesy mass, having the appearance of inspissation and degenerated pus or lymph. There was no trace of an epithelial lining to the cyst walls, such as Magitôt has stated to exist; but upon their inner surface, was a layer of granulation cells; the lining in fact, closely resembled that of the dentiferous cysts, but was thinner, less dense and more cellular.

Very commonly the crown of the affected tooth is the seat of caries. The cysts sometimes form a projection upon the outer surface of the jaw at the reflection of the buccal mucous membrane; if the wall of the bone have been sufficiently distended, "crackling" is obtained on pressure over the prominence.

I shall not enter into a consideration of the cysts of the antrum by dilatation of its mucous glands, for they are in no way connected with the teeth, and this cavity may be considered rather as an appendage to the nasal than a portion of the jaws.

Permit me to call your special attention to a few concluding remarks.

I shall not consider this study of the cystic tumours of the jaw in vain, if, by its means I am able to bring forward one fact indicating the relation of the tumours to each other and to the malformations by excess.

The first step in this series of abnormalities in the jaws

may be, perhaps, the formation of a more or less perfect supernumerary tooth, or the displacement of an ordinary tooth; in both instances a dentigerous cyst may result. Again, the rudiment of a supernumerary or suppressed tooth may give rise to a simple cyst lined with epithelium, probably by expansion of the enamel organ during the early or embryonic period of its growth. Allied to such simple cysts formed around a single supernumerary tooth are those containing many imperfectly formed dentary bodies; these stand in much the same relation to the jaw as the dermoid cysts containing bone, teeth, muscle, do to the different parts of the body in which they occur.

And further still the same *tendency* to abnormality in the dentition, or stated more exactly, a tendency to the formation of supernumerary teeth or the suppression of teeth, if not manifested until puberty or adult age may, perhaps, give rise to the form of multilocular cystic tumour, consisting of an enormous overgrowth of a tissue bearing a general resemblance to the rudimentary enamel organ; continuously growing, but having little tendency to recur after removal, and never becoming disseminated throughout the system.

And, if the morbid growth appears at a still later period of life a form of tumour results resembling cancer both in its anatomical and clinical characters, but still possessing such a general likeness to the rudimentary enamel organ that its origin cannot be doubted; it may bear in type of development and clinical characters much the same relation to the other more benign form of multilocular cystic tumour as a cancer does to adenoma, but in a lesser degree, and between these two types every gradation in structure is observed.

Upon the chain of anatomical evidence just indicated, we may dare to argue that a tendency to variation first exhibiting itself in the formation of a supernumerary tooth, or possibly the suppression of a tooth may, through various modifications and dilutions in transmission, give rise by evolution and involution to all the different forms of cystic tumour of the jaw just mentioned. In support of this hypothesis, I may further add that all the different peculiarities in the number and form of the teeth are distinctly hereditary.

SOME POINTS IN DENTAL DIAGNOSIS.*

By WILLIAM HERN, M.R.C.S., L.D.S. Eng.

MR. PRESIDENT AND GENTLEMEN.—Before any one can successfully treat a disease he must be well acquainted with its nature, and the symptoms to which it gives rise, and inasmuch as diagnosis is the science which teaches us to trace symptoms to their *fons et origo* and to distinguish one diseased condition from another, it holds a very important position in the practice of our profession, for on it depends, not only successful treatment and consequent benefit to our patients, but it also enables us to give a prognosis or forecast of the duration of the diseased condition. Granted, then, that the art of diagnosis is of such primary import, it is well for us next to examine the best method of attaining proficiency in it. It could be easily acquired if the symptoms and signs of each disease were the same in all cases, but unfortunately they are not, and although groups of symptoms and signs are drawn up for guidance in diagnosis, yet modifications of these groups of symptoms, or parts of them, will sometimes be found in diseases far remote from that to which they especially refer, so that unless the case be looked at and examined from all its aspects, we shall run the risk of arriving at a wrong conclusion. A hasty diagnosis without a careful and systematic examination will lay us open to a similar error to that of a young medical fledgling, a good man at theory, who when called to a patient suffering from intermittent abdominal pain, and perceiving the abdomen to be distended, at once came to a conclusion, and pronounced the patient pregnant and in the first stage of labour, whereas had he made a careful and proper examination, he would have ascertained the two symptoms were due to an attack of colic. Although, therefore, general rules of diagnosis are useful for guidance, yet, gentlemen, those which will prove most serviceable to us are culled from an extended experience and accurate observation of cases which present themselves to our notice.

The study of anatomy and physiology or the structure and functions of the body in health, must ever hold a cardinal position as a ground work to that of pathology, on which latter depends the investigation of disease after death, and

* Read before the Students' Society of the Dental Hospital of London, February 12th, 1883.

therefore, indirectly, that is my subject. It is the study of morbid anatomy that elucidates to the physician the causes of symptoms observed during life. It is so with our specialty and I would take the opportunity of suggesting to you (I speak especially to first-year's men) the benefits to be derived, and advantages and insight to be gained by practising the same. Post-mortem examinations in extracted teeth; knowledge so acquired will teach you more and sevre you better than that gathered from books, to this end, I would advise the frequent employment of the excising forceps to be followed by that of the pocket lens or microscope, you will thus, by tracing backwards and remembering the symptoms elicited from you patient prior to extraction, be able to refer these symptoms to their primary cause.

Skill in observing is no less essential than skill in acting. and equally requires much use for its attainment; in the study of general medicine and surgery this fact is recognised, and by a careful taking of cases in the words and elsewhere, the necessity of accurate observation and systematic examination is impressed on the student, just so should it be in our smaller circle of Dental practice when, prior to coming to a conclusion on cases, we should ascertain, some at least of the following points :

Age.

Occupation.

History of diseased conditon.

Mode of accession. { Suddenly or
gradually.

If pain, character. { a. Continuous.
b. Intermittent.
c. Acute and lancinating.
d. Dull and aching.

„ time of accession or exacerbation.

If injury, when and how effected.

„ nature and direction of the force, &c.

Although I have thus advised a careful examination before proceeding to a summary conclusion, yet I am well aware that we shall be able at times, and pretty accurately too, to diagnose a great many conditions without these preliminaries, a facial diagnosis even can frequently be made, the unilaterally swollen face, the worn-out countenance, and anxious eye peering through an extravagant investment of wrappers, is a well known spectacle in out-patient extracting-room as pathognomonic of alveolar abscess. Or, again, in the coupling of cause and effect to give a ready diagnosis, or, at least, an indication of fracture in patients who have received blows

about the mouth. After having received an affirmative answer to direct questions suggested by Mr. Pedley as: Blow? Yes. Kick? Yes. Boot? Yes. Husband? Yes. Yet a confirmatory examination is required and it will be the surer practice to investigate obscure cases in the manner suggested.

In Dental as in general diagnosis, we have necessarily to be guided greatly by subjective sensations or *symptoms*, which are changes in the formations of the parts affected, but we must pay especial attention also to those physical signs, such as can be ascertained by the senses of the observer, for in the latter we are free from any exaggeration or misconception on the part of the patient.

To commence with one of the earliest conditions, we may be called upon to diagnose. viz. *Tongue-tie*.

In this the tongue is unable to perform its functions naturally and comfortably. It cannot be projected beyond the lips, and in the attempt has its tip drawn down towards the floor of the mouth.

In extreme cases it will be found fixed to the floor and incapable of any movement. A nearly transparent whitish membrane may sometimes be seen running with the frænum and continuing beyond it almost to the tip of the tongue. The child has difficulty in sucking which is accompanied with a clucking noise. By elevating the tip of the tongue with the little finger, the defect is apparent, as it is also when the child cries.

Teething is another early condition on which we may be asked to give a diagnosis, or at least, to settle in our own minds the advisability or impropriety of using the lancet. Mr. Tomes recognises two conditions when we should do well to have recourse to it.

1st. When concomitant with many of the symptoms of teething, such as diarrhœa, loss of appetite, cough, shortness of breath, sighing or convulsive respiration, eruptions on the skin, spasms of particular muscles, or general convulsions, &c., then exists the local symptoms of a hot and irritable condition of the mouth with the gum prominent and in a state of tension over the subjacent tooth (in this case lance deeply down to the erupting tooth).

2nd Where the mouth is hot, inflamed, and painful, in which the gums may be scarified superficially without reference to liberation of teeth.

In considering diarrhœa as a diagnostic sign of teething, Mr. Coleman gives a few words of warning, for it is in his opinion, frequently induced by improper attention to the nourishment of the child. To ascertain—

1. Whether similar conditions prevailed when teeth were erupted previously, and passed off with its completion.

2. Whether other portions of mucous membrane were likewise affected, as shown by catarrhal symptoms generally.

3. Whether the circumstance exists that a group of teeth are being or about to be erupted.

4. Whether, above all, the child is receiving its nutrition in proper quantities, qualities, and periods.

Next in order comes the consideration of *stomatitis*, a subject which was ably treated of in a paper recently by Mr. Buckland, and which I propose to consider in the same order.

1. *Simple stomatitis*.—Is a common accompaniment of the first dentition. The mucous membrane of the mouth and tongue will be found covered with reddish, slightly elevated patches of inflammation, somewhat shining, on the surface. The patches frequently coalesce so as to give the whole mucous membrane of the oral cavity a red and injected appearance.

2. *Thrush* is a condition in which, in addition to a stomatitis, there is the presence of a cryptogamic growth, the *oidium albicans*. The mouth is covered with a number of small whitish spots which appear at first on inner surface of the lips near the angles of the mouth, but soon spread to the mucous membrane of the cheeks and tongue.

On removal of these patches the mucous membrane beneath will be left injected and bleeding. In severe cases the spots may so coalesce as to form a false membrane in appearance. The health of the child is generally disturbed.

3. *Ulcerated stomatitis* is a disease of comparatively common occurrence in London; the patients are children who are brought up under very improper hygienic conditions, they will also often be found rickety.

Age varies between two and seven years; more commonly it affects the lower jaw than the upper, and is generally first seen attacking the outer margin of the gum at the necks of the temporary central incisors or temporary molar teeth, it may also be seen as a line of ulceration on the cheek opposite to this.

It is generally confined to one side of the mouth. The ulceration is of a grey ashy colour, and yields an offensive sanious discharge.

This condition is easily remembered by the specific effects of a few doses of pot. chlor.

4. *Follicular stomatitis* may occur as a sequela of one of the infantile fevers, and is generally concomitant with

gastric disorder. It appears as a number of small, shallow, circular ulcers on the tongue and inner surface of the cheeks or lips; these are fugaceous, but as one crop disappears another often shows itself.

5. *Gangrenous stomatitis* is of rare occurrence, but is an occasional sequela of one of the acute specific fevers of childhood, and makes its first appearance on the inner surface of the cheek, soon causing it to swell, giving the outer surface a tense, red, and glistening appearance, which is brawny and hard on palpation. The swelling soon breaks down in the centre, forming a deep, irregular ulcer covered with a dirty brown slough, this has a tendency to rapidly enlarge and involve the mouth and adjacent structures. There is little or no pain, at least, the pain is out of all proportion to the destruction of tissue. As this is a condition which is only amenable to treatment in the early stages, it is one which the Dental Surgeon should be able to diagnose.

Dentigerous cysts.—In the diagnosis of these cysts the assistance of a carefully taken history will be apparent.

Age.—Occur generally under thirty, and very often in youth. Mr. Heath, however, mentions cases in patients sixty and fifty-six years; Mr. Salter one in a patient aged forty.

History and characters.—1. They are generally painless (unless suppuration is secondarily induced).

2. Slow growth (Mr. Tomes mentions one of ten years' duration).

3. The absence of one or more permanent teeth (we must not forget, however, that they may be caused by a supernumerary tooth).

4. Presence of temporary tooth.

Form.—5. Rounded, hard, smooth. When they occur in the lower jaw they give rise to a general expansion of the bone rather than a distinct tumour, hence it is liable to be mistaken for a solid growth, which happened in two published cases. One by Mr. Fearn, of Derby ('Brit. Med. Journ.'), and another by M. Lisfranc, in both of which the half of the maxilla from the symphysis to the articulation was unnecessarily sacrificed. When they occur in the upper jaw (where Mr. Salter thinks they are most common) they generally involve the antral cavity.

6. In advanced cases a parchment-like crackle of their now attenuated walls enables one to diagnose fluid contents.

7. On making an exploratory puncture in the mouth (which should always be done in these and all doubtful cases before operating) a viscid, sparkling fluid escapes.

8. The diagnosis is confirmed by probing the cavity and ascertaining the presence of a tooth or teeth.

Multilocular cysts may occur in connection with retained teeth or stumps, or, entirely independent of this, their diagnosis consists in the following:

1. Slow growth.
2. Attain larger size.
3. May have irregular outline.
4. Similar crackle of attenuated walls in later stages.
5. Cause no inconvenience except in size.
6. No tendency to fungous excrescence.
7. Fluid contents on exploration.
8. Glands under jaw not involved.

Mr. Heath mentions several cases; Dr. Wilks, also, in 'Guy's Hosp. Rep.,' 1847.

Cystic sarcoma is a growth which is distinguished from the foregoing by:

1. Its rapid growth.
2. Being a solid growth, in which cysts of various sizes are afterwards developed.

3. Its tendency to fungate.
4. Continuous and wearing out pain.

In connection with cysts must not be forgotten that of *ranula*, a cyst which forms in the soft tissues of the floor of the mouth. Its diagnosis rests on:

1. Its position, under the tongue and quite superficial.
2. *Shape*, oval or flattened.
3. *Size*, varying from the size of a pea to that of a small orange.

4. *Character*, painless and fluctuating.

5. *Contents*, clear, yellowish, gelatinous fluid.

Other tumours of the jaws.—The diagnosis of a cystic from a solid tumour in the early stages is very difficult, it is still more difficult to distinguish at once whether a tumour is malignant or otherwise. Generally the *osseous*, *fibrous*, *fibro-cellular*, and *cartilaginous* tumours

1. Are of slow growth.
2. Are painless, or do not give much pain.
3. Are more or less hard to the touch.
4. Do not affect the general health.
5. Do not involve surrounding tissues or skin except by mechanical interference.

The *myeloid* and *vascular* tumours, among which we include some kinds of epulis, are characterised by:

1. Their softer structure.
2. Their more vascular appearance.
3. Their greater rapidity of growth.

4. Their absence of fungation.
5. Their liability to occasional slight bleeding.
6. Their liability to occasional ulceration.
7. Their occasional liability to recur after removal.

The *malignant tumours* are characterised by:

1. Their great rapidity of growth.
2. Their softness of texture and vascularity.
3. Their early recurrence after removal.
4. Their tendency to fungate and involve neighbouring structures, and to copious hæmorrhage.
5. Their inducement of the cancerous cachexia.

These are generally the medullary cancers, although sometimes scirrhus is found.

In diagnosing a tumour of the upper jaw, a careful inspection should be made of the face, mouth, nares, also the amount of projection beneath the cheek, the condition of the hard and soft palates, &c. If the antral cavity is involved a tooth should be removed so as to search for it through the socket. Solid tumours involving the antrum often displace the teeth on that side.

In diagnosing a tumour of the lower jaw :

Slowness of growth,

Hardness,

Isolation,

Absence of tendency to fungation,

Absence of enlargement of glands,

} Point to a non-malignant character, the reverse to a malignant.

Abscess of the antrum is a condition of rather frequent occurrence, the diagnosis of which consists in:

1. The dull, deep-seated pain, often of a throbbing character.
2. The swelling, œdema, and tenderness of the cheek.
3. The rapid accession of symptoms following a history (a) of alveolar abscess, (b) catarrh, (c) introduction of foreign body, &c.
4. The slight lengthening of the teeth of that side without producing irregularity in position.
5. The bulging of the palate.
6. The effacing of the sulcus above the molar and bicuspid teeth.
7. Offensive discharge from the corresponding nostril (although this is not constant).
8. Evacuation of pus through an exploratory puncture.
9. In extreme cases bulging of the eye through upward pressure on the floor of the orbit, and "crackle" of distended antral walls on palpitation will be apparent.
10. In some cases without rigors and constitutional disturbance at outset.

Odontomes consist of masses of dental tissues, which result

from morbid conditions of the formation pulp. They have been divided by Prof. Broca, according to the period at which they arise, into four groups.

1. Odontomes embryoplastiques, or those which occur before the development of the *membrana eboris*.

2. Odontomes odontoplastiques, or those which occur after the development of the formative element of enamel dentine but before the formation of a cap of dentine.

3. Odontomes coronnaire, or those which arise during the formation of the crown of the tooth.

4. Odontomes radicaire, or those which arise after completion of the crown and during the formation of the root.

The correct diagnosis of some of these tumours is important before operating, for cases have occurred where a severe surgical operation was intended, had not the diagnosis been accidentally made.

In those of the first class, inasmuch as they are formed before the development of the *membrana eboris*, they will necessarily be soft, and resemble the ordinary fibrous tumours.

In diagnosing the existence of one or other of the three remaining forms, attention should be paid to:

1. Their distinct limitation.

2. *The age*.—Usually youth or young adult. May, however, be older. Mr. Tomes's patient, æt. 41 ('Odont. Trans.' 1863), Mr. Maisonneuve's patient, æt. 40, Mr. Salter's patient, æt. 30.

3. The enlargement of the jaw *without* the appearance of the teeth.

4. The absence of one or more teeth.

5. The absence of crackling or fluctuation on palpation.

6. The absence of fluid on attempting to puncture.

7. Diagnosis cleared up by incision over the tumour.

8. May inflame and be mistaken for necrosed bone.

(*To be continued.*)

NEW HANDLE FOR THE FLATTING MILLS.

By THOMAS FLETCHER, F.C.S.

THE general rule in a Dentist's laboratory is that these valuable tools are in such a condition as to be little use, and

many who have mills, which might be made good, send their gold out to be melted and rolled, entailing both expense and trouble, which could easily be avoided. When the mills have been in use about six or twelve months, the faces of the rollers become thoroughly condensed and uniform in hardness, and have also, as a rule, become slightly out of truth. A few shillings spent on grinding them up dead true, will ensure their working perfectly for many years afterwards; rollers after ten years use will roll pattern lead dead true and flat for yards in one continuous length.

The greatest fault of most mills is in the form of the handles, which were evidently designed by some one who never saw them used. On my own mills I had, on the right side, a four arm cross handle, +, and on the left side a ratchet handle. With these the mills do not require to be strewed to the floor as the pressure is always downwards, and I can, without assistance and with little trouble, roll out an ingot of three or four ounces of hard gold into a plate three inches wide, bringing it down fully one size each time going through. A ratchet handle on both sides would be rather easier, as the handle is always in the best possible position, but one fixed handle is absolutely necessary to enable the rollers to be run backwards.

These handles were made and fixed, to my instructions, by Messrs. Thewlis & Co., Warrington, and they have since made copies of them for others. It would be worth while for the depôts to keep one of these arrangements in stock, and, judging from the opinions of those who have the thing in use, they would be taken in preference to any other form. The alteration is a simple matter to apply to any existing mills.

Reflections from the Surgery.

FRACTURE OF THE INFERIOR MAXILLA.

Case reported by H. J. ALEXANDER, L.D.S., Eng.

M. C. O'C—, æt. 36, whilst on a voyage in the Steamship Speke Hall, met with an accident of which the following are the particulars :

To give an idea of how it occurred, it will be necessary to describe briefly the construction of the ship. Built upon the main deck, which is but a little higher than the water line, are the officers' cabins, fore; the engine house, midships, and the saloon, aft; and to afford space for promenade the roofs of the cabin and saloon are provided with a gangway, the latter being protected by a rope on the one side.

On October 27th, at about 10 o'clock, he was passing along the gangway during very rough weather, when, by some mischance, his foot slipped, and with the additional movement of the ship was thrown with great violence against the wall of the engine house; his face being struck between the left eye and ear. The distance was about ten feet. Rendered unconscious, he was afterwards found by some of the crew to be bleeding from the ears, mouth, and nose, and with the assistance of the doctors on board was put to bed, where he remained until eight o'clock on the following morning, quite unconscious. Upon recovery, it was found that the inferior maxilla, to the right side of the symphysis was fractured. Dr. Wilkins of the Bombay A.M.D., and Dr. Cooke, of Liverpool, succeeded in fixing the jaw with soda water bottle wires and bandages, which made the part feel very comfortable.

On November 3rd he consulted me, and I immediately proceeded to take a model for a Hammond's wire splint, which was fitted on Sunday the 5th. I called upon him on the 7th to relieve the pressure of the splint from the gum, behind the wisdom tooth, and found all going on satisfactorily. On the 10th I could report the same. A visit from him on the 20th showed all was right, and I gave him permission to go to France for two months.

Upon his return, January 29th, he called to see me, when I wished to remove the splint, as I was sure a perfect union had been made, but his fear that the act of mastication might strain the parts, I decided not to disturb it until a fortnight, when the splint was removed with great satisfaction on the part of the patient at the result of the treatment.

In addition to the fracture, some injury was done to the upper jaw, which was treated by Mr. Thomas Bryant.

British Journal of Dental Science.

LONDON, MARCH 15, 1883.

WE have not had within the last fortnight anything of such importance as to call for an urgent appeal from our pen, so that we shall take the opportunity to refer to those subjects which have occupied our attention during the last six months.

The Dental Register, which underwent some modification of arrangement during the meeting of the General Medical Council, has appeared in its new form, the offer to allow additional qualifications to be entered having been taken advantage of by twenty-one only. We are rather surprised at this considering the time it took to obtain a decision in the Council. If we understand that the introduction of additional qualifications was at the wish of a small minority, this return can be accounted for; but, on the other hand, if it were to show to the world the educational status of the profession, the omission is a sad one.

According to report, some delay has taken place in the drafting of the Medical Amendments Act. This we are sorry to see, for with so important a measure as that hanging over us, great anxiety is felt. We have no doubt that every opportunity will be given to place the Dentist in his true position, but prejudice and ignorance of facts are sure to enter into the conflict, and unless great forethought is exercised we may find we have some very awkward difficulties to overcome. The equality of examinations is our great ambition, so that we can lose sight of those offensive attacks which are so constantly being made by our medical contemporaries. The Dental student is as willing to acquire a high professional knowledge as any other, so it remains for those who regulate the educational laws to see that a fitting curriculum is prepared.

We may again remind our readers of Mr. Tomes's valuable suggestions as to the probable cause of alveolar abscess which we referred to in our issue of February 1st, as it is one of the greatest importance. We know of several who are following the course we ventured to suggest, and must hope others will follow their example.

The evident interest several learned physicians are taking to ascertain the predisposing causes of Dental caries shows that Dental Surgery is rising from its insignificance, and with a union of the labours of the physician and Dentist means will be found to combat successfully the innovation of the nineteenth century.

It is so long since the 'Lancet' hurled its last *brutum fulmen* at the Dental profession, that we were beginning to think that it had abandoned that hostile spirit for one more consistent with its position as the voice of the medical profession. Should we not be mistaken, our conclusions are that its experience with the Dentist has been gained from the class whose contributions help to fill its coffers, hence the violence with which it attacks all that relates to our calling.

We are told in an annotation which appeared in the issue of March 3rd, that :

"It is satisfactory to find that at least one judge on the bench recognises the limits of the speciality created by the quasi-medical, and altogether equivocal, title created by that anomaly of the Statute-book, the Dental Practitioners Act—namely, 'Dental surgeon' Mr. Justice Field has declared that the 'Dental Surgeon' cannot be regarded as an authority on the subject of acute diarrhoea, alleged to arise from bad food supplied by the owners of a passenger ship. We are so thankful for small mercies in regard to the interpretation of this monstrous Act, that we must confess to a feeling of very great pleasure in chronicling the legal fact of this ruling. In many 'populous districts' wherein 'Dental surgeons' and 'surgeons' in Dentistry combine

their licensed tooth-drawing with the dispensing of drugs—in short, keep a ‘doctor’s shop’—it is most desirable that the local public should understand that the fact of being a ‘Dental surgeon’ does not make a druggist a *medical* authority even in so common a malady as ‘diarrhœa.’ Those who live at the West-end of the metropolis have no notion of the ignorance evinced by the multitude in the East in relation to matters medical.”

We fear our chronicler has been so elated with the few words which the learned judge said on an opinion expressed by a Dentist, that all logical classification is put on one side so that language full of facetious sarcasm might be used to convey to the medical world that which, for its object, can only be to degrade a body of men whose services can claim to be one of the most beneficial to mankind. The inaccurate interpretation of facts are too apparent in the extract we give to call for any further explanation from us. We can only deplore that a journal in which so much is done to advance “matters medical” should grasp at a remark which only dealt with the qualification as an expert, and endeavour to create contempt for the workers in a branch of the healing art.

THE ‘Dentists’ Register’ for 1883 is now published and furnishes some data of an interesting nature.

Although the results deduced must be considered as general, an absolute analysis of the state of the profession being impossible, as many practise with medical qualifications and are not on the ‘Register.’ Many more have qualifications and do not trouble to register them at all. Only some 21 are so registered, and of the 5 foreign practitioners 2 are British licentiates.

The hand of time and the “survival of the fittest doctrine” are at work on the one hand to purge the ‘Register,’ whilst the laudable ambition of many to take a higher status, is equally marked on the other; but perhaps the most gratifying aspect is the large increase of students registered, which in 1879 was 39, but is now 166, an increase of 147.

It may also be stated that since 1879 the licentiates have increased by 276, whilst those registered without qualification show a decrease of 313 since 1881, when they reached their maximum, leaving a nett decrease on the 'Register' from last year of 89, notwithstanding that 30 gentlemen have become licentiates of the Royal College of Surgeons of England in the interval, who may be considered as representing the natural increase to the profession for the four years, or at the rate of $7\frac{1}{2}$ per annum, to supply the place of those removed by death and retirement; but the long list of students indicates improvement in this direction for future years.

Manipulative Miscellany.

All instruments or articles wished to be described under this heading [are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month, they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits, and without any intention or wish to pit one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

DR. HODGE'S NEW ENGINE HAND-PIECE.

A PIECE of mechanism of exquisite finish has been brought before us by Mr. Rutterford, in the form of an improved hand-piece for the Dental engine. To state clearly the advantage it possesses over those in use, they are:—First, the absence of any opening by which oil can reach the hand of the operator; and secondly, a mode of fixing the point in which absolute rigidity is obtained, no forward, backward, or lateral movement being possible.

The description we can give must be short, as to put down all details would occupy more space than is at our command. Its external appearance differs from others in being much thicker in its inferior half. By removing the upper case the main body is exposed from the tapered end of which appears the tri-segmented clamp which holds the

point, and by removing the lower case the means by which the clamp is worked is brought into view. The clamp is worked on the cone principle, so by turning a broad-milled band it is extended and at the same time opens; the reverse action withdraws it and brings the segments of the clamp tightly round the point. By this method the point is firmly held, and as the points of most makers differ only at the ends, their use can be made so long as their thickness is not beyond the average. There are also a double set of washer screws to tighten up should any looseness occur after wear between the several parts. The points are changed by simply unscrewing an extra sheath, which exposes the broad-milled band already described, which does not take the operator four seconds to do as but two turns of the sheath are necessary.

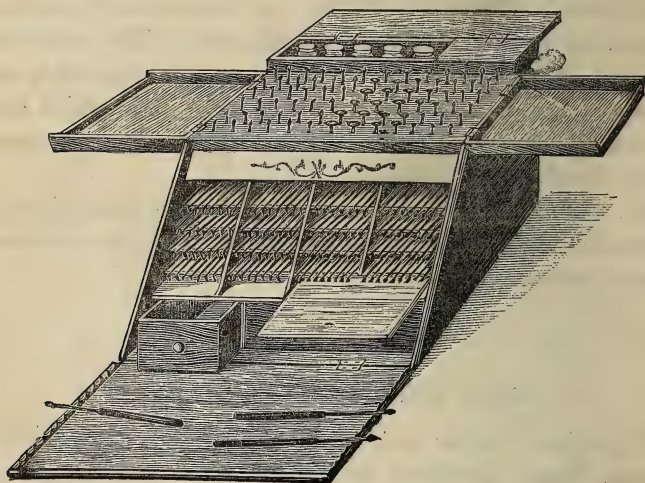
Mr. Rutterford will be glad to show the hand-piece to anyone should our description have failed to convey a correct idea of its construction.

GOLD COHESIVE CYLINDERS.

WE think that as more than a year has elapsed since Messrs. Smale Brothers introduced their gold cylinders, an accurate estimate of their worth can be made. It is so frequently found that the sample productions of a firm are superior to that which follows that all expressions of praise in so delicate a material as that employed in the filling of teeth should be held somewhat in reserve. We have received quantities from time to time according to our requirements, and can say they always show the same delicate qualities. We use them cohesively as our personal inclination is to make the special cylinder for non-cohesive manipulation according to the cavity to be filled, but we convey that as our own opinion only, and hold the opposite view with respect. The different sizes meet all that is wanting for convenience, and we have no hesitation in saying that with due care the most satisfactory results will be obtained.

NEW DENTAL CABINET.

THE Dental Manufacturing Company are constructing cabinets, one of which appears in the annexed illustration, from patterns designed by Mr. J. W. Dent. This gentleman has found the one originally made for him of extreme value owing to the convenient way most of the instruments used in daily practice are arranged.



It appears, according to a prospectus before us, that its measurements are in inches, $12 \times 10 \times 8$, and it will contain from 260 to 280 burs, excavators, pluggers, engine-bits, &c., besides a spirit-lamp and slab for mixing the white plastic fillings. The way in which the entire contents are enclosed is so plainly shown in the illustration that further description is unnecessary.

We are of opinion that many will appreciate this addition to the Dental surgery, as if the instruments are only returned to their places after use, they will be readily seen at a glance when required again, and much valuable time saved.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

ORDINARY MEETING, HELD MONDAY, MARCH 5TH, 1883.

JOSEPH WALKER, M.D., President, in the Chair.

THE minutes of the previous meeting having been read and confirmed, Mr. WALLIS showed a series of models which he presented to the Society in which supernumerary and supplemental teeth appeared in various positions.

Mr. ACKERY exhibited a boy where a number of supernumerary teeth were present in the lower jaw, the great crowding presenting a most peculiar appearance.

Mr. J. S. TURNER delivered some interesting remarks on the maxillæ of the young girl whose body was found in a box, the discovery being well known to our readers. The chief interest lay in the position of the teeth as a guide to age. The wisdom teeth were in their crypts, the second molars were erupted but showed no sign of wear, the first molars were faceted, and the second temporary molars were retained in their position owing to lateral pressure, and their retention therefore was considered quite accidental and could not be given as a guide to age. Mr. C. S. Tomes and others who spoke, gave the age as being not less than fourteen years and not more than sixteen years.

Mr. HUTCHINSON also showed a supernumerary deciduous tooth.

The discussion on dental caries was further adjourned and Dr. Thorogood read the paper announced for the evening, which will appear in our next issue.

The discussion in which Messrs. Warwick Hele, Coleman, Sewell, Stocken, and others joined, was followed by some further demonstrations of Mr. Stevenson's electric lamp, and the meeting stood adjourned until April 2nd.

Literary Notices and Selections.

A NEW METHOD FOR BLEACHING DISCOLOURED TEETH.

By Dr. E. C. KIRK, Pennsylvania.

ALL processes for bleaching or restoring discoloured teeth to a lighter colour may be summed up under two divisions: First, those of a mechanical character, which consist in reducing the thickness of the walls of the tooth until they are more or less translucent, and then lining the cavity with a light-coloured cement, which, seen through the thin walls of enamel gives the tooth a lighter appearance. Second, those of a chemical character, by which a lighter shade is obtained through a true bleaching agent.

The mechanical method is objectionable in certain cases, from the fact that the amount of excavating that is necessary to reduce the walls of the tooth to a state of semi-transparency greatly lessens the strength and increases the risk of subsequent fracture.

Where the discoloured tooth has so far decayed as to leave only the transparent walls of enamel standing, lining the cavity with a light-coloured cement is no doubt the best method; but where the tooth is only slightly decayed and its walls are thick, a bleaching agent should be used which will not weaken it. The chemical methods which have heretofore claimed the most attention are all based upon the bleaching property of chlorine gas.

Having had considerable difficulty in bleaching discoloured teeth satisfactorily by means of chlorine, I was led to make some experiments with a view to obtain results which would be permanent.

The greatest difficulty in any method that I am aware of, in which the active bleaching agent is chlorine, is to cause it to act through a considerable body of dentine, without repeated applications, involving much time and annoyance.

Chlorine would undoubtedly give satisfactory results if it were possible to keep it in contact with the discoloured tissue in sufficient quantity for an adequate length of time, but this object is defeated in all the methods yet devised for its use by two causes. When the pure gas is used, or its solution in water, a sufficient quantity cannot be retained in the pulp-

chamber and cavity of decay to permeate the walls of the tooth unless they are extremely thin. When the gas is evolved from any of its compounds, such as calcium or sodium hypo-chlorite, packed in the cavity and moistened with alum solution or dilute acetic or oxalic acid, the decomposition is almost instantaneous, the gas being eliminated so rapidly that it escapes from the cavity without accomplishing its object, only a small portion acting on the dentine. This necessitates repeated applications, especially if the tooth-walls are of considerable thickness.

To thoroughly restore a discoloured tooth to anything approaching its natural colour, it is essential that the bleaching agent should permeate the dental tubuli as far as their discoloured and decomposed contents extend, and this can only be accomplished by evolving the gas slowly and continuously for a considerable length of time within the walls of the tooth. With this idea in view, the following method was devised, which in its present application, so far as I am aware, is original: 100 grains of sodium sulphate Na_2SO_3 , and 70 grains, or, more accurately, 69.841 grains of boracic acid, HBO_2 , both carefully dried, are ground together in a warm dry mortar to a fine powder. This is to be put into a bottle with an air-tight stopper and kept in a dry place.

Having adjusted the rubber dam to the tooth to be bleached and the one adjoining it on each side, the cavity of decay is to be cleansed of all debris, and the root solidly filled with gold or gutta percha for one half its length. The powder is then to be packed into the remaining portion of the pulpcanal and cavity of decay, leaving just sufficient room to insert a gutta-percha stopping. After the powder has been properly inserted a drop of water is allowed to fall upon it from a pledget of cotton twisted around a broach. Only enough water should be used to moisten the powder or make it thoroughly damp without washing it out. The cavity of decay is then to be quickly closed with a pellet of gutta percha (preferably red base-plate), previously prepared of the proper size and warmed. The patient can then be dismissed until the next sitting, when a second application can be made, which usually completes the operation, though where the tooth-walls are very thick and much discoloured a third application may be necessary.

This method is based upon the bleaching power of sulphurous acid. When water is added to the mixture of boracic acid and sodium sulphite, a chemical reaction takes place, the boracic acid unites with the sodium of the sodium sulphite to form sodium borate, at the same time liberating the sulphurous acid which was originally in combination with the

sodium, and which is the active bleaching agent. Thus $\text{Na}_2\text{SO}_3 + 2 \text{HBO}_2 = 2 \text{NaBO}_2 + \text{H}_2\text{SO}_3$.

The bleaching action of sulphurous acid on a tooth by the method just described is quite rapid, a very perceptible improvement in colour taking place in from fifteen to twenty minutes. The gas is eliminated slowly and continuously for several hours, for the reason that the boracic acid which liberates the gas from combination with the sodium is a solid substance, not freely soluble in water, and the evolution can only take place as the boracic acid becomes dissolved, which requires a considerable length of time. Sulphurous acid as a bleacher seems to be fully equal in activity to chlorine, if not superior to it, so far as discoloured dentine is concerned. It has no disintegrating action upon tooth-substance, and its results seem to be permanent; a tooth bleached by this method over a year ago shows no tendency to discoloration. The sodium borate resulting from the reaction is also without injurious action on the tooth; indeed, when teeth have been bleached by this method, I have noticed an increased hardness of their structure. Sulphurous acid bleaches by an entirely different method from chlorine. I am not aware that it possesses any advantage for tooth-bleaching by reason of this difference, but it is of interest from a chemical point of view, and it is well to note it here, as future research may develop the fact that such difference is of importance. Investigation has shown that chlorine acts as a bleaching agent by reason of its strong affinity for hydrogen. Vegetable and animal colours, when brought in contact with chlorine in the presence of water, have their colour discharged from the fact that the hydrogen of the water is seized upon by the chlorine, and the oxygen set free oxidises the colour and destroys it, chlorine in this case acting *indirectly* as an oxidising agent. Sulphurous acid, on the contrary, is a reducing agent by reason of its affinity for oxygen, in combining with which it becomes oxidised to sulphuric acid, H_2SO_4 .

On the chemical character, therefore, of the colouring matter depends the choice between sulphurous acid and chlorine for bleaching purposes. Chlorine should be used when the colour is an oxidisable compound, or rich in hydrogen, while sulphurous acid would apply more particularly to substances highly oxidised and capable of being reduced. The same course of reasoning would apply to their use as disinfectants and antiseptics—properties which they both possess in a marked degree.

I have presented to you in a brief manner the outlines of a process I have had occasion to use from time to time for

the past eighteen months. While conscious that it is still far from perfection, I have every reason to feel considerable satisfaction with the results obtained. Further investigation may show that better results can be produced by some modification of the ingredients of the bleaching powder. A change which I have recently made, consists in the substitution of boric oxide B_2O_3 for boracic acid, in the proportion of sodium sulphite 200 grs., boric oxide 111 gr. Theoretically this gives a little over 1 per cent. more sulphurous acid gas than the first formula given. Both mixtures are made by combining the powders used in their proper equivalent proportions, by which two results are obtained—a complete disengagement of *all* the sulphurous acid in the compound, and the production of a neutral inert residue without injurious action to the tooth.—*Cosmos*.

CARIES OF INFERIOR MAXILLA, WITH FISTULOUS
OPENING UNDERNEATH THE CHIN, OF DENTAL
ORIGIN.

By WM. B. MILLER, D.D.S., Altoona, Pa.

LOUIS T. H.—, aged about 22 years, attorney-at-law, called, February, 1882, for consultation. Previous to any examination he stated that in September, 1880, the first indication of any abnormal condition was an enlargement underneath the chin, and in a brief space of time a fistulous opening was formed through which there was a free discharge of pus. The tumour increased in size till it was about as large as an ordinary walnut, when, becoming alarmed, he consulted a physician, who pronounced the growth an epithelioma, and advised its removal, which was subsequently done in as thorough a manner as possible considering that the original cause of the affection was obscure. The wound was treated for a short time as is common in such cases, but showed no disposition to heal entirely.

About three months after this operation—the patient not being satisfied with the result, and under the conviction that he had an incurable cancer—called as above stated for consultation and examination, although his father had about determined to send him to New York for treatment. Inquiring about the condition of his teeth, he replied that he had never suffered from them, but on further inquiry as to

whether he had ever received any injury from a blow or otherwise in this locality, he stated that about twelve years ago he had been thrown from a horse, receiving a fracture of the skull in the region of the occiput, at which time he remembered having a trifling corner broken from one of the inferior incisors, but from which he suffered no pain or inconvenience. In fact, at no time since the occurrence until presenting to me did he suffer the least pain in the parts affected. I made a careful examination; the anterior teeth were apparently sound, there being no indications of decay, but to the left of the median line immediately over the apices of the roots of the central and lateral teeth the gum-tissue was inflamed, the line of demarcation between the normal and abnormal gum being very perceptible, and there was a hypertrophied condition of the base of the alveolar process. The fistulous opening underneath the chin was situated to the right of the median line and about one inch posterior to the maxilla. A probe was introduced into the fistula, leading to the base of the jaw. On the left central and lateral incisors a slight difference in colour was shown, but so little as to cause doubt as to their being devitalised. An opening was made through the central, the instrument readily dropping into an empty pulp-chamber. A Donaldson nerve-bristle was then passed through the tooth, and with but little effort through the body of the bone, emerging at the fistulous opening. The lateral incisor was treated in like manner with similar results.

Caries of the bone of dental origin being fully diagnosed, the two teeth above named were extracted. This being done the case was treated for about one month by injection of aromatic sulphuric acid, carbolic acid, and iodine, alternating the former with the two latter in a dilute form. These were forced through but reached the orifice of the fistula in very small quantities, owing to the minuteness of the opening through the border of the bone. At two different times the orifice healed, but opened again, and the discharge recurred in a more aggravated form.

A more heroic treatment was decided upon, and the operation was performed by the aid of the dental engine in the following manner: Assisted by Drs. Jacobs and Rivalles, the patient was etherised and a grooved director was passed to the bottom of the fistula and an incision made the entire length of the fistulous track to the border of the bone. The soft tissues were dissected away, exposing the bone, which presented a healthy appearance. Not being able to find the carious opening by external probing, this was effected by passing the Donaldson nerve-bristle through the alveoli of

the extracted teeth. A trephine, such as is used on the S.S. White dental engine, was next brought into requisition, the engine being operated at the highest degree of speed possible by an assistant, when the trephine passed readily through the external plate of bone into the carious pocket; a large-sized bur was then used for the purpose of enlarging the opening made by the trephine and the carious interior thoroughly broken up and removed. The opening through the alveoli of the extracted teeth was then enlarged in a similar manner, enough to admit of free injections and to give exit to any remaining debris, which was thoroughly washed out by the aid of a suitable piston syringe charged with a solution of alum-water for the purpose of arresting the bleeding, which, however, was very slight. The operation was completed by removing a portion of the scar from the result of the former operation, and also the remains of the fistulous track or canal. In so doing the submental branch of the facial artery was severed, the hæmorrhage from which was at once arrested by torsion.

The opening through the bone was next injected with aromatic sulphuric acid, full strength, and a carbolised tent passed through, allowing an end to project from the alveoli in the mouth and also underneath the chin. The parts were then brought together and retained by five stitches and protected by adhesive strips. The patient suffered no inconvenience from the operation, but walked home, a distance of a mile. The following day the tent was removed and the aromatic sulphuric acid again injected, taking the precaution to protect the soft parts by a free application of cosmoline before so doing. For six days after the operation the tent was introduced, gradually diminishing its size, and injections were made as before. The incision healed rapidly, with the exception of that portion on a line with the opening in the bone, which was purposely kept open in order to afford perfect drainage and admit of free injection. After the sixth day the injections were of a mild form, and alternated by using carbolic acid, iodine, and sulphate of copper. The case was thus treated for about one month, the object being to have the opening gradually fill up with new bone, which it did in a very satisfactory manner. The opening in the soft tissue underneath the chin healed up entirely in the course of a few days. I then saw the patient about three times weekly, injecting through the alveolus, as a matter of cleanliness to the parts, as long as a trace of the opening remained.—*Dental Cosmos*.

EPILEPSY—ITS CONNECTION WITH DISEASES OF THE
TEETH.

By C. C. WHITE, M.D., Columbus, O.

THE disease on which I am about to make a few remarks, or observations, is scarcely less terrible than those of the same class—tetanus or hydrophobia. Though not of so immediate and urgent peril to life as the others, yet it leads to more misery and distress, and is the cause of perpetual anxiety—I mean epilepsy. The object of my choosing this subject for my paper, is to give one exciting cause of this malady, which I hope may prove interesting, and which I believe is not generally known; and before enumerating this particular exciting cause of the fits, as laid down in various authorities.

Epilepsy is undoubtedly a *brain* affection, as there is always loss of consciousness during the fits; and as the brain and spinal cord are most intimately connected, though physiologically distinct, this disease gives us a good example of their distinct nature, for when the latter is acting in a most disorderly manner as well as in an energetic way, you have the former influence entirely suspended. The theory that all convulsive diseases, entertained by some authorities, being diseases of the spinal cord, can not properly be applied to the convulsions of epilepsy. It is true that in all convulsive diseases the cord is concerned, but that is also the case in any voluntary movement whatever.

In tetanus there is no loss of consciousness, and therefore its convulsions are solely acted upon by the spinal cord, and is consequently a pure spinal cord disease. In epilepsy the brain is acted upon, and in some cases there is no convulsion at all.

Some authorities think that the most common periods for the first attack of epilepsy are about the age of seven to eight years, and often later, in a few cases after sixty. But the fits may occur at any age, and the convulsions of young children not unfrequently end in the disease. In fact, in nearly every case where you can trace the disease backward, you will find they have had infantile convulsions. The actual cause of epilepsy is mere conjecture.

If we want to find the morbid anatomy of the disease, we look for a post-mortem examination of those who have been subject to fits. What do we find? In many cases nothing

whatever to account for death. We find, in some cases, the membranes, the brain, and the cerebellum are all gorged with blood; but this is to be ascribed to the mode of death, that we see the same appearances in persons that have died of any form of apnœa, that they are not peculiar to epilepsy, and only point out the way in which it proved fatal. The most common alterations met with in the brain are indurations of the white matter, which frequently presents a dull appearance; the white matter is diminished in many cases, it is soft, but still the blood-vessels are enlarged.

All over the white matter these changes are seen. The grey matter is found on its surface here and there, patched with rose-coloured spots, generally of a different consistence. The same changes are met with in insanity complicated with paralysis; it shows the connection of the two diseases, but leaves us to conjecture the true state of the nervous mass on which the fits of epilepsy depend.

Among the exciting causes of epilepsy, fright is the foremost; and severe mental emotion is sure to produce the fits, where there is a predisposition to the disease, and this would alone show it is not a spinal cord affection. Great pain may also act as an exciting cause.

But now I come to the exciting cause which has originated this paper. I mean pressure of an exostosed root of an inferior molar or wisdom tooth on the inferior dental nerve, And in order to show how this excitement may be produced, it will be necessary for me (though very briefly) to enter into the anatomy of the nerve and its connection with the brain.

The inferior maxillary is the largest branch of the fifth pair. After its passage from the ganglion through the foramen ovale, it divides into two branches—the external and internal. It is with the inferior or internal branch we have to treat, it being the sensitive portion. This nerve gives off the auricular, the inferior dental, and the gustatory nerves. The inferior dental separates from the lingual, and after sending off some small branches enters the canal in the lower jaw, and supplies each tooth with soft delicate twigs; so we have through this branch direct communication with the large nerve itself, and so with the brain. It is a well-known fact that if the whole or any part of the nervous system be predisposed to any special disease, irritation applied to any set of nerves may induce that disease, the degree of this irritation being wholly insufficient to excite the sympathetic malady where there has been no predisposition; therefore, disease of the teeth will produce epilepsy if there is a predisposition to this disease. Illustrations of this may be met with in the works of Hunter, Tomes, Bell, Ashburner, and

other writers on diseases of the teeth. I now proceed to give some authenticated cases where epilepsy has been actually cured by the removal of a root which caused pressure on the inferior dental nerve, which cause kept up irritation and caused the fits.

CASE 1.—A child aged three and a half years, who was brought to a Dental surgeon to have a tooth extracted. His father said he was afflicted with epilepsy from the age of twelve months. The frequency of the fits ranged from six to eight per day. The tooth caused great pain—this was the father's reason for wishing to have it removed. At this age, namely, three and a half years, the child could neither speak nor walk. It was observed on examination that the teeth were crowded, which is most unusual during first dentition. Some of them overlapped and some of them much decayed, and, as we shall see hereafter, the state of the mouth aggravated the malady. The tooth was extracted. At the end of three months satisfactory intelligence was communicated that the fits had entirely disappeared during that period until the last week, when they again made their appearance. The corresponding tooth on the other side was then removed, and the child was relieved for the same period. Upon the recurrence of the attacks a lower molar tooth was removed, which was decayed, and no fit occurred for some weeks, when another took place accompanied by a severe attack of toothache in the opposite tooth to that last extracted. This was then taken out, and no fit occurred for some months, and after a lengthened period the patient was lost sight of. In this case we have clearly an exciting cause for the fits, namely, pressure on the nerve, and as each tooth was removed the symptoms ceased.

CASE 2.—A gentleman was seized with epilepsy after having a set of false teeth made, which occasioned not only alarm, but great distress to his family. It was thought that the teeth had some connection with the fits. His mouth was examined, and several exostosed stumps had not been extracted, and the false teeth were worn over them, which, of course, caused much pressure on the stumps, and consequently on the nerve. The stumps were removed and the fits ceased.

CASE 3.—A clerk fell down twice in the street, attacked with epilepsy. He was conveyed home, and the next day, owing to severe pain in the inferior molar, he was brought to Mr. Snape, of Liverpool, to have it removed. After its extraction he had no more recurrence of the fits. The roots were greatly exostosed.

In the last two cases there was no predisposition to the

disease. Mr. Tomes relates the following in his book on 'Diseases of the Teeth':—A farmer labouring or suffering from epilepsy. He did not complain of pain in the teeth or in the jaw. The decayed teeth were removed, and the roots of each were found to be bulbous and enlarged from exostosis. The patient, during eighteen months after the removal of the teeth, had not one single fit, though for many weeks previous to the operation he had two or three per day. Mr. Tomes relates the case of a policeman who was afflicted with fits of epilepsy. When his mouth was examined, an inferior wisdom tooth was much decayed. This was removed, and the fits abated. All spasms originate from irritation applied to nerves.

Dr. Ashburner was called to see a groom in London, England, who fell down in a fit of epilepsy. On looking into his mouth he found a sad decay of double teeth. Seven of these were removed under the idea that they might be acting as irritants to the nerve of the jaw. At the next visit the patient was found to be recovering the use of his speech. Several months after the man was perfectly well, and had no return of fits. In this case it is quite clear that the fits were due to pressure on the nerve. I will, in conclusion, invite attention to the fact, that when we fail under medicinal treatment to subdue this fearful disease, let us not hesitate to examine the mouth and see if there is cause to believe that pressure may be keeping up the fits.—*Southern Dental Journal*.

CASE OF FOREIGN BODY IN THE EAR NEARLY TWENTY YEARS.

By LUCIUS HOLLAND, B.M., M.D.,

PHYSICIAN TO THE NEWCASTLE-ON-TYNE DISPENSARY, NELSON STREET; TO
THE DEPARTMENT FOR DISEASES OF THE EAR, AND LECTURER
UPON DISEASES OF THE EAR AND AURAL SURGERY.

E. H—, aged twenty-seven, came to the dispensary complaining of frequent headache and giddiness. According to my custom in these cases, the ears were examined, and, a black mass of cerumen being visible in the right ear, she was referred to my clinic for diseases of that organ. Some difficulty being experienced in clearing the canal, a probe was employed, which at once came into contact with a hard body; and its impaction required the further use of forceps

for removal. This body, upon examination, was found to be metallic, in shape like a grape-stone with very sharp apex, and weighed twelve grains. It was kindly tested for me by Mr. Leopold Dean, analytical chemist at Sir Wm. Armstrong and Co's., and proved to be a globule of iron.

The patient had lived in the neighbourhood of ironworks from the age of three until ten years, and as a child played and rolled in the sand. During the latter part of this time she suffered from pain in the right ear, for which the workmen puffed in tobacco smoke. At the age of ten years she was removed from the locality, and since then has resided in such places where no opportunity has afforded for the introduction of such a body, besides having no recollection of anything of the kind happening during the seventeen years. The globule of iron must, therefore, have been in the ear nearly twenty years. It was embedded in dense cerumen, occupying the deep part of the canal, the circumference of which I observed to be irritated, the membrana tympani was somewhat depressed and thickened, with alteration of the "cone of light." Hearing has not diminished, and since the removal of the foreign body the giddiness and headache have ceased. After the age of ten years the ear-ache subsided as the calibre of the canal increased. This case may be regarded as a most remarkable instance of a dangerous foreign body remaining for years in the ear without serious and alarming consequences.—*British Medical Journal*.

ACONITINE.

THE 'Lancet' says the variations in strength of specimens of foreign aconitine have been investigated by Plugge in consequence of a death in Holland, supposed to be due to an error in dispensing. It was found that Petit's nitrate of aconitine has a poisonous action at least eight times stronger than Merck's and one hundred and seventy times stronger than that of Friedländer. Hence it is clear that the preparations known as "German aconitine" vary much in strength and also differ very much from the French, and the greatest caution should be exercised in prescribing and in dispensing the preparation. In the case which occasioned the investigation, Friedländer's preparation was intended, but not specified, by the prescriber, and Petit's was used instead, so that the dose given was a hundred and seventy

times greater than was intended! The cause of this difference is at least partially explained by Messrs. Williams and Cleaver, in a paper read at a meeting of the Pharmaceutical Society. The product varies according to the source from which it is obtained, the variation being apparently due to a real difference in alkaloidal constitution. *Aconitum paniculatum* contains an alkaloid which is evidently not like that of *Aconitum napellus* in its physiological action, while the alkaloid of Japanese aconite root, now extensively imported, is, according to Langgard, far more poisonous than that obtained from any other variety of the plant.

A CASE OF DOUBLE HARE-LIP IN A MAN AGED THIRTY-TWO.

By WILLIAM ROSE, B.S., F.R.C.S.,

ASSISTANT SURGEON TO KING'S COLLEGE HOSPITAL; SURGEON TO THE ROYAL FREE HOSPITAL.

LEONARD S—, æt. 32, living at Wadhurst, Sussex, was admitted into the Royal Free Hospital in June, 1881, with double harelip and complete cleft of hard and soft palate.

The patient's appearance was repulsive in the extreme, and, in the neighbourhood where he lived, he was shunned by most people, especially by pregnant women, who feared to look at him lest their offspring should be similarly affected. He was principally employed in carrying coals; hence his blackened face, coupled with his hideous deformity, gained for him the unpleasant reputation of being an emissary from the infernal regions. The reason for his remaining without operative interference for thirty-two years is partly explained by his devotion to his widowed mother, whom he refused to leave to go to a hospital, and it was only after her death that he consented to have anything done.

The extraordinary prominence of the inter-maxillary bone with one central incisor and the stump of the other surmounted by the central portion of the upper lip and columnar nasi, like a proboscis, gave increased hideousness to the face.

The patient also had a very marked stare, or what I should call a hunted look in his eyes, due, I believe, to the knowledge of his unfortunate appearance, and to the effect he knew it would produce upon those seeing him.

The lower lip was large and fleshy, and hung down, with everted mucous membrane, over which saliva constantly dribbled. The palate was widely cleft, but the edges of the soft parts were thick. Articulation was most imperfect, and it was almost impossible to understand what he said.

Operation.—The patient was chloroformed, and the first steps of the operation were directed to bringing the projecting intermaxillary bone back into position between the maxillæ. To effect this, the mucous membrane was pared off each side of the intermaxillary bone and the edges of the maxillæ. Next, the intermaxillary bone, after the incisor stump had been extracted, was partly cut through, at its junction with the vomer, with bone pliers applied from behind forwards; by this means it could be pushed back into position and the above-mentioned raw surfaces brought into contact. A strong silver wire suture was passed through each maxilla across the front of the intermaxillary bone, to keep it from slipping out of place.

The lips were then dealt with in the ordinary way, care being taken, in the first place, to dissect each side freely up from the bone, to prevent undue strain when bringing the raw edges together. The central portion of the upper lip continuous with the columnar was slightly loosened by dissecting it up from below, its edges pared so as to fit in accurately, like a wedge, with the base upwards, between those of the lateral flaps. Three hare-lip pins were inserted, the two upper transfixing in their passage the central portion, and the parts came easily into position after the twisted figure-of-eight silk suture had been carefully applied. There was smart bleeding at the time of the operation, but it soon ceased of itself. The pins were removed on the fifth day, and four days afterwards profuse hæmorrhage occurred from both nostrils, and the union threatened to break down. The bleeding was with difficulty checked by position, pressure, and application of ice. The remaining central incisor, which seemed to be exercising injurious pressure, was extracted, and strapping applied to diminish the tension. But on the following day, as no improvement had taken place, and the tendency to occasional hæmorrhage was still present, I re-inserted two hare-lip pins and applied the twisted suture as before. After this everything went well, and I withdrew the pins on the fourth day, the lip having firmly united. The intermaxillary suture was taken out on the fourteenth day from the operation. The patient's appearance was greatly improved, but the lower lip was very unsightly and drooped more than ever and he could not close his lips together. I therefore removed a V-shaped portion from the middle of the

lower lip, taking care to remove more mucous membrane than skin. The result of this was very satisfactory, the scar being almost invisible, the lips coming well together and articulation being quite intelligible. I would here mention that this method of shortening the pouting lower lip was first suggested fifteen years ago by Mr. Oakley Coles, in his 'Deformities of the Mouth,' but I am not aware of any published case where it has been carried out. The patient left the hospital, and has not up to the present time fulfilled his promise of returning to have his palate operated on. I have ventured to record the case, as one of such severe character is seldom met with at the age of thirty-two in these advanced days of surgical science and civilisation. Doubtless it would have been better and easier to have closed the palate-cleft before operating on the lip, but the patient came up with the specific object of having his appearance improved, and I feared that if I operated first upon his palate and even completely succeeded, he would not have been sufficiently convinced of the benefits derived to be induced to return for a subsequent operation on the lip; and, lastly, I do not consider that, at his age, the closure of the palate was of such importance as the removal of such an unfortunate deformity.

—*British Medical Journal.*

BACTERIA.

DR. GREGG denies *in toto* the theory of bacteria, and believes that the so-called living organisms are not such, but are only fibrin in its various changing forms and conditions. He sustains himself by a line of facts and reasonings that seem to justify his position, and which certainly warrant the consideration of candid minds. The 'Medical and Surgical Reporter' says of Dr. Gregg's writings on bacteria and diphtheria: "A physician of Buffalo, Dr. Rollin R. Gregg, has attacked what he calls 'the great bacteria fallacy,' maintaining that the so-called micrococci in the diphtheritic membrane are in reality granules, fibrils, and spirals of fibrin. It appears that he has written a book on the subject, which, however, we have not seen. From some expressions in the reprints sent us we judge him to be of one of the independent schools of medicine. At any rate, his views deserve consideration."—*St. Louis Clinical Review.*

Dental News.

THE DENTAL HOSPITAL OF LONDON.

The twenty-fifth Annual Meeting of this Institution was held at the Hospital, Leicester Square, last evening, under the presidency of Edwin Saunders, Esq., one of the Trustees.

In the report, which was unanimously adopted, the Managing Committee congratulated the Governors on the continued success and prosperity of the Institution, on completing the first quarter of a century of its existence; also on the great benefits which the Hospital continues to afford upon the suffering poor, 35,893 cases having been treated during the year 1882, being an increase of 5,094 on the previous year. That in consequence of the still increasing number of patients it had been found necessary, at the earnest desire of the Medical Staff, to purchase additional operating chairs. Unfortunately, however, the accommodation was still inadequate to cope with the further wants of the Hospital, and that, after careful deliberation, it had been resolved to purchase the lease of the adjoining premises at the eastern end of the Institution for the purpose of the extension of the Hospital, and the Committee make a very urgent appeal for the funds necessary for the *extension of the Hospital*, and for *fitting up the new wing*, towards which object Edwin Saunders, Esq., one of the trustees, had promised a munificent contribution of £1200, and S. J. Hutchinson, Esq., to give or collect £50, on the sole condition that twenty more promises of a like sum are forthcoming without delay, and they expressed an earnest hope that this generous offer would be followed by the required number being obtained from amongst the benevolent public. Also that the "Wandering Minstrels" had most kindly promised a concert on behalf of the Hospital Extension Fund, to take place at the Grosvenor Hall on Thursday evening, May 31st, 1883, on which occasion the Committee hoped that the Governors and friends of the Hospital would favour them with their presence. The Hospital is unendowed, and increased funds would enable it greatly to extend its usefulness.

NATIONAL DENTAL HOSPITAL.

THE twenty-first Annual General Meeting of the above Institution took place on Wednesday, February 28th, when the President, Lord Enfield, occupied the chair.

The minutes of the previous meeting having been read and confirmed, the chairman called upon the secretary to read the Report in which it appears that, like other institutions, its finances has suffered owing to the depressed condition of the country. To meet the existing want of money to enable the committee to carry on the work of the Hospital, special appeals had been made to the public, and it is gratifying to find have been liberally responded to. One lady has generously offered the sum of £250 and an additional £50 per annum as long as she lives if a like sum of £250 can be collected. This the secretary was able to state was being fast accumulated, so that in a short time an amount will be in the hands of the Committee by which the debt incurred by the extensive additions to the premises, which were necessary for the requirements of the students, will be paid off.

A scheme which has been under consideration for some time was being carried out, by which the cigar tips, cut off prior to smoking being collected from numerous clubs, hotels, and private individuals were sold and the proceeds given to the Hospital. The short time which has elapsed since the enterprise was started, prevented the Secretary giving an opinion upon its success. The scheme has been successfully worked by the Committee of the German State Orphan Asylum, which institution derives a considerable income from that source.

The report of the Medical Committee which followed, showed the attendance of 17,520 patients during the year, and the number of cases treated 21,138. An important question came under the notice of the Committee during the year which we think should be reported. The Hospital Sunday Fund sent by a patient a special order for a set of artificial teeth, and the house-surgeon on his own responsibility, and inadvertently, supplied them, but finding that the Secretary of that Fund wanted to credit the hospital with the sum of £5, the amount of cost of that "surgical appliance" resolved "That the set being made, the Committee would not object to their being given to the patient but as the Hospital did not supply artificial teeth under any circumstances, no payment could be accepted."

The number of students attending the Hospital has considerably increased, and the opportunity afforded to registered Dental practitioners for special instruction for short terms has received recognition.

After the usual proceedings for the election of the committee and officers for the current year, the President remarked that he was pleased to be able to attend that day so as to show that he took a personal interest in the welfare of the Institution. He had, during the many years he was their President, observed very many changes. At times there seemed every probability that the useful work of the charity would have to be suspended owing to the lack of public support, then a brighter turn took place, and he was not saying too much, when referring to the gradual progress made in every department during the last six years, that there was a very bright future for the National Dental Hospital. The necessity for keeping pace with the present time was ever in the minds of those who had control over the educational department, and he was sure that those who obtained their professional education at the National Dental Hospital would feel that their time had been well employed. On the policy of joining the London Dental Hospital, he had little to say, when such an arrangement was pointed out to him as having been accomplished, he would retire with a pleasurable reflection of what had been brought under his notice during the twenty years he had been associated with the Institution, but failing that arrangement, he could assure those present that he would render every support in his power.

WE notice that the American Dental Society of Europe will hold its eleventh annual meeting at Cologne on August 7th next, and give a cordial welcome to the members of the profession to be present.

APPOINTMENTS.

MR. GEORGE BENNISON, L.D.S. Edin., has been appointed Hon. Dental Surgeon to the Home and Orphanage of the Poor Sisters of Nazareth, Southsea.

MR. S. J. HUTCHINSON, M.R.C.S., L.D.S., has been appointed Dental Surgeon and Clinical Lecturer on Dental

Surgery to University College Hospital, London, *vice* G. A. Ibbertson resigned.

MR. G. A. IBBERTSON, F.R.C.S., L.D.S., has been appointed Consulting Dental Surgeon to the University College Hospital, London.

MR. WILLIAM HENRY KIRTON, L.D.S. Irel., has been appointed Honorary Dental Surgeon to the Hospital for Women, Wilson Grove, Southsea, Hants.

MR. CLAUDE ROGERS, M.R.C.S., L.D.S. Eng., D.M.D., has been appointed Assistant Dental Surgeon to the London Dental Hospital.

MR. R. H. WOODHOUSE, M.R.C.S., L.D.S. Eng., has been appointed Dental Surgeon to the London Dental Hospital.

MONTHLY REPORT OF CASES TREATED AT THE DENTAL HOSPITAL OF LONDON,

FROM FEBRUARY 1ST TO FEBRUARY 28TH, 1883.

Extractions	{ Children under 14	423
	{ Adults	788
	{ Under Nitrous Oxide	448
Gold Stoppings.....		218
White Foil ditto		10
Plastic ditto.....		724
Irregularities of the Teeth treated mechanically.....		143
Miscellaneous Cases.....		358
Advice Cases.....		145
Total.....		3257

W. F. CORNELIUS,
House Surgeon.

MONTHLY REPORT OF CASES TREATED AT THE NATIONAL DENTAL HOSPITAL,

FROM FEBRUARY 1ST TO FEBRUARY 28TH, 1883.

Number of Patients attended	1467
Extractions { Children under 14.....	350
{ Adults.....	584
{ Under Nitrous Oxide	126
Gold Stoppings	87
Other Stoppings	430
Advice and Scaling	144
Irregularities of the Teeth	76
Miscellaneous.....	346
Total	2143

CHAS. W. GLASSINGTON, M.R.C.S.,
House Surgeon pro tem.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 82, Mortimer Street, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
3. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
4. All communications relative to subscriptions and advertisements are to be addressed to the Publisher, Mr. J. P. Segg, 82, Mortimer Street, Regent Street, London, W.
5. The Journal will be supplied direct from the office on PREPAYMENT of subscriptions as under:

Twelve Months (post free) 14s. 0d.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skliros, 82, Mortimer Street, Regent Street, W. A single number sent on receipt of seven (penny) stamps.

ANSWERS TO CORRESPONDENTS.

J. HEALY.—We are not acquainted with the Canadian laws on the subject.

"J. F."—Decidedly not.

"W. H. G."—Your letter is too personal.

Communications have been received from Messrs. Thos. Fletcher (Warrington), Newland Pedley (London), W. H. Kirton (Southsea), Geo. W. Rutterford, Dental Manufacturing Company, W. F. Cornelius (London), C. W. Glassington (London), Secretary of the Odonto-Chirurgical Society, Secretary of the London Dental Hospital, Thos. Fletcher (Warrington), S. J. Hutchinson (London), W. Miller (Berlin), W. Whitehouse (London), J. Healy (Bolton).

BOOKS AND PAPERS RECEIVED.

'Lancet.' 'British Medical Journal.' 'Medical Times and Gazette.' 'Transactions of the Odontological Society.' 'Metallurgie Dentaire Pratique.' 'Transactions of the Odonto-Chirurgical Society.' 'Revue Odontologique.' 'L'Art Dentaire.' 'Pharmaceutical Journal.' 'L'Odontologie.' 'American Journal of Dental Science.' 'La Gazette des Hôpitaux.'

NOTICE.—We desire that it may be clearly understood that our pages are open to all for free expression of their views on matters connected with our profession. We only ask for terseness of expression and MODERATION IN TONE.

When otherwise unobjectionable, difference of political or other opinion will never be regarded by the Editor as a disqualification for the admission of any communication to the pages of the BRITISH JOURNAL OF DENTAL SCIENCE.

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ON THERAPEUTIC AGENTS FOR THE PROMOTION OF OSSEOUS DEVELOPMENT.*

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THE study of the process of nutrition and growth has been said to be the crowning point, or final aim, of all research in physiological chemistry.

There is not likely to be growth without nutrition, and it is from lack of proper nourishment that we see certain particular organs of the body fail in function and waste in structure.

The maintenance of the healthy nutrition of the human race is a business concerning every department of medical, surgical, and physiological science. Public health officer, physician, and surgeon are here called upon all to labour in harmonious concord, and my special purpose this evening will be to endeavour to indicate the benefit that may be looked for as a result of a good understanding and co-operation between the physician and the Dental Surgeon. Illustrations of the important relation of the Dental art to that of physic are numerous enough: one example shall be enough. A gentleman, twenty years ago exactly, became such a martyr to dyspepsia that powders of bismuth and soda were regular concomitants at all his meals, and a physician, now deceased, who in his lifetime stood as one of the highest medical authorities of the day, pronounced the patient to be affected with cancer of the stomach, which malady would soon end his days. A well-known Dental Surgeon advised the patient to allow him to remove some old roots of teeth and fit him with a good set of artificials. This proposal seemed so startling, and almost mocking when made to a man who had been assured that he was gradually

* Read before the Odontological Society of Great Britain, March 5th, 1883.

sinking into his grave under an evidently fatal malady, that it required some further consideration and consultation before it could be entertained ; it was, however, not only entertained, but acted upon, and I can testify to the fact that the patient regained his digestive power, and is now a fairly vigorous man of eighty-four years.

Here was a case where nutrition was failing most unmistakably and distressingly ; and who can fail to admire the acute observation of the man who detected why it failed, and then with his clever art restored strength, vigour, and enjoyment of life to the patient so that he has long outlived both his physician and his Dentist. It is not always, however, that the cause of wasting and failing nutrition is as obvious and as remediable as in the case just narrated. In young and growing subjects we often observe failure or perversion of nutrition to an extent that leads to serious and by no means unfounded apprehension as to the future.

The subject that I would wish specially to bring before this meeting is, Failure of nutrition in the osseous tissues : its causes, and the best remedial measures and therapeutic agents for the promotion of osseous development.

The hard or osseous tissues of the body are represented by the bones and the teeth. The best analysis of bone shows that it contains in 100 parts—

Phosphate of lime	.	.	.	57 parts.
Carbonate of lime	.	.	.	8 "
Fluoride of calcium	.	.	.	1 "
Phosphate of magnesia	.	.	.	1 "

(Lehmann iii, 18.)

67 parts + 33 cartilage.

With regard to the teeth, Lehmann tells us that the mineral constituents of dentine are identical with those of the bones, and occur in nearly the same relative proportion. The quantity of carbonate of lime varies more than it does in bones, however, from 3 to 8 of carbonate of lime having been found with 65 to 67 of phosphate of lime.

The tooth enamel differs from the dentine inasmuch as from it no cartilage can be obtained, whilst the total of organic matter in the enamel does not exceed 2 to 6. The tooth cement is very closely allied in composition to bone. The chemistry of carious teeth does not teach us much, but, according to Marchand, the tendency of teeth to this mode of destruction may be referred to their containing excess of carbonate of lime.

I venture just to remind you of these matters of physiological chemistry, elementary though they be, for they prove

the necessity of mineral food for the nutrition of osseous tissues.

Proof of the way in which the animal system absorbs and turns to account mineral matters is afforded by the fact that if the leg of a hen be fractured, while this fracture of bone is repairing any eggs that the bird may lay will be soft, and without hard shell; the reason being that the earthy salts required to harden the egg-shell are wanted to harden the new bone at the seat of fracture. We may see these conditions reversed in the human female; for if a pregnant woman meets with a fractured bone repair is slow, for the reason that the earthy lime salts are all required for the nutrition of the osseous tissues of the *fœtus in utero*. The tendency of the system during pregnancy to absorb and assimilate lime salts is exemplified by the fact that osteophytes and bony thickenings sometimes appear in the earlier months of gestation, but are absorbed as pregnancy advances, and bone begins to form in the *fœtus*.

The necessity of mineral nutrition in order for perfect and symmetrical growth is seen in plants as well as in human beings. The hard or osseous tissue of a grain of wheat is its husk, or seed coat; if this be removed the phosphates are removed with it, and in the starchy part of the grain none are found. Wheat planted in earth deprived of phosphates germinates, but soon dies. Peas sown in a soil devoid of phosphates produce no flowers. (Rabuteau, 1865.)

By analogy we understand how a child, fed on food apparently nutritious, but yet lacking in phosphates and mineral matter, grows, but it grows with soft and bending bones, and teeth that rapidly fall into decay. We see this in the disease called rachitis, or rickets, a word said by Trousseau to be derived from "*riquet*," which in Norman-French idiom means humpbacked or deformed. It was about 1630 that rickets was first observed as a new disease in England, and described by the anatomist Glisson. Rickets is the type of a highly-developed condition of faulty osseous and dental evolution; there is marked non-assimilation by the system of earthy salts, and soft bones and rotten teeth are the result. There is no other atrophic disease which so markedly retards the development of the teeth as rickets. The disease generally supervenes about the epoch of dentition, and out of 346 cases noted by Dr. Jules Guérin there were but five in which the disease showed itself after the age of five years. The bone-softening, or osteomalacia of adults, so much commoner in women than in men, differs from rickets in the fact that it is rapid absorption and elimination of bone earth that causes the softening. In rickets

it is failure of assimilation that prevents hard, healthy bone-forming. In rickets we see softness of the bones generally, the cranial bones are soft and yielding, and the lower jaw very imperfectly developed.

The evolution of the teeth is retarded, or, if commenced, is interrupted, and when the teeth do appear they are carious and black, and soon fall from their sockets. A tendency to profuse sweating about a child's head, an overhanging, bulging forehead, marked by very evident blue veins, soreness and tenderness of limbs generally, are some of the symptoms that indicate a tendency to rickets.

Now it appears that in rickets the calcareous salts of the food are either imperfectly supplied, or, if supplied, are not taken up and deposited in the bone cartilages, and this is one element in the pathology of the disease. It is said that lactic acid present in the blood keeps the lime salts in solution, and thus they are excreted by the kidneys. Chemical analysis of the urine of rachitic children shows that it commonly contains four to six times as much phosphate of lime as is met with in normal urine, and not unfrequently the presence of lactic acid is said by Niemeyer to have been proved in this secretion. That failure in the processes of osseous nutrition does not account for all the phenomena of rickets has been shown by Virchow; but this observer reminds us that rickets is usually preceded by a certain kind of acid dyspepsia, during which less albuminate is taken up by the system. Thus the amount of earthy salts taken up by the system is diminished, inasmuch as these are absorbed as soluble albuminates.

Virchow admits that at present this view of his is but problematical; nevertheless, I think we shall, without pursuing further the pathology of rickets, find that we have arrived at something that we can turn to practical good.

I would say, then, observe in a child whose osseous or dental tissues seem failing in their nutrition, if there be signs of acid dyspepsia; observe if the breath has a sour smell, and notice the tongue if it be coated with whitish or yellowish fur, through which red papillæ are seen pointing; see, too, if the tonsils are not unduly large; inquire about the stools, if they are irregular, pale, often lumpy, mixed with mucus, and always very sour-smelling and offensive; and, if these things be so, you will have a case where there is excess of acid in the alimentary canal, and with this condition faulty osseous nutrition is pretty sure to be associated. When inquiry is made as to diet, we may find that though the appetite is voracious, there is but little albu-

minous or flesh food taken. Cornflour or starchy foods are largely consumed, and sugar is freely allowed—just the very diet to generate excess of lactic acid in the alimentary canal. The saliva, even, may be quite acid, and it is well known that in diabetic persons, whose blood is loaded with sugar, this secretion of the glands of the mouth has been proved to contain free lactic acid,* an acid well known as a powerful solvent of lime salts. The contents of the large intestine, which are normally alkaline, become acid after excess of vegetable and starchy food, and then much mucus is secreted. This fact was noted by Lehmann in two cases of persons who had fistulæ opening from the large intestine outside on the surface of the body, resulting from the performance of the operation for artificial anus.

The recognition of this condition of acid dyspepsia and mucous irritation in young children is very important, and certainly every Dental Surgeon should have his eyes open to observe and detect it: for it is a condition that saps and undermines his best handiwork, and brings annoyance and vexation to parent and offspring.

I pass on to a few words as to the remedial measures. Suppose things have got so bad that the chemical analysis shows that earthy salts, chiefly phosphate of lime, pass off in undue quantity by the urine, and bones and dentine are actually softening, do we cure this condition at once by simply administering lime as a remedy? The Latro Chemist or mere chemical physician, might perhaps say yes, but in medical practice mere chemistry is not enough to lead to precision in choosing our therapeutic agents, or at any rate chemistry must be taken into account in a wide and extended sense.

To give to a big-bellied, tallow-faced child, with swelled glands, and tongue coated with slimy acid mucus, and whose large intestine is full of hard lumpy fæces, either phosphate of lime or iron will probably cause headache, feverishness, and failure; but cut off starch and cane-sugar from the diet, cleanse the bowels by such an alkaline aperient as the compound decoction of aloes, and clear the blood by enjoining free exposure to fresh air, with salt-water baths and diligent rubbing of the skin afterwards, and then administer some of the preparations of which I am going briefly to speak, and the patient will be brought to a condition in which the Dental Surgeon can work on the decayed molars with some prospect of his work remaining a long-lasting proof of his skill and dexterity.

* The teeth in diabetes are singularly liable to caries.—‘Quain’s Dictionary.’

To bring about this most desirable condition the rules for diet that I find answer well are, first, to ensure slow feeding, so that farinaceous and milky food may be thoroughly mixed with the saliva—hence, if the infant be fed with a bottle we must see that the current is not too rapid.

Bread made with malted flour is to be preferred to ordinary wheat bread, for the addition of the ground malt promotes the change of the starch of the flour into glucose, or grape sugar, and so renders it more digestible. The diastase of the malt acts like the ptyalin of saliva, by converting starch into nutritious, easily assimilated glucose.

The constipating effect of wheaten bread can be overcome by adding one part of barley meal to three of wheat flour. With regard to actual phosphatic constituents, as determined in the ash, barley and wheat do not greatly differ. For example:—

The ash of wheat yields 2·81 of lime and 49·81 of phosphoric acid.

The ash of barley yields 2·62 " 38·93 "

The ash of oats yields 5·95 " 43·84 "

(*Pereira.*)

Of magnesia the proportion is twelve in wheat, seven in barley, nine in oats. It is in the husk, or seed coat, that the mineral constituents of the grain chiefly reside; hence the advantage of having some of the husk ground up with the meal, as in the flour known as "seconds," which is in reality more nutritious than the best white flour.

Scotch oatmeal, in the form of properly made porridge, agrees well with some children, and the food is one rich in phosphatic elements, for the oats that are grown in the North appear to assimilate mineral matters from the soil in larger amount than those grown in the South. In cases—and these are not uncommon among delicate children—where oatmeal and brown bread appear to heat and irritate the stomach, we may administer the wheat phosphates in powder, after the method proposed by Dr. Hake and the late Dr. Tilbury Fox. A strong decoction of bran is evaporated to dryness, and the dry residue triturated with sugar of milk. The powder thus prepared can be given in milk, in doses of ten to twenty grains, twice daily.

With regard to the special form of lime salt that is best adapted for the cure of a child whose bones show signs of softening there is a word to be said.

First we have the ordinary phosphate of lime of the B.P., made by precipitating a solution of bone ash in hydrochloric acid by means of ammonia. Thus prepared it is a soft white powder, readily soluble in hydrochloric acid without effervescence, and the dose ordered in the B.P. is from ten to

forty grains. The probability is that of the minimum ten-grains dose, at least two thirds would pass away by the bowels, for the books tell us that less than five grains of phosphate of lime is as much as the gastric juice is likely to dissolve, the remainder passing away unchanged. The phosphate of soda in the saliva, and in the gastric juice, is believed to be the agent which renders the phosphate of lime soluble when taken as powder. In this belief some observers say that phosphate of lime has no advantage over the carbonate, for if the carbonate be taken by the mouth it is converted into a soluble phosphate, and as such is absorbed for the nutrition of the tissues.

To me it seems needless to give phosphate of lime as a powder in doses of 10 to 40 grains; it is but to fill the stomach with a considerable mass of insoluble earth, and so add to already existing irritation. If phosphate of lime be given, be content to give two or three grains twice daily, either as a powder on bread, with a grain of heavy carbonate of magnesia added, or give the phosphate in solution with a few drops of dilute hydrochloric or phosphoric acid. I have notes of the cases of children that have suffered with obstinate strumous pneumonia, swelled glands, big bellies, and pains about their bones and limbs, called sometimes growing pains, that have made excellent recoveries under the administration of soluble lime salts; and the two that I have found far the most beneficial in their action have been the soluble hypophosphite of lime and the chloride of calcium. Either one of these salts, given in doses of two or three grains with glycerine and water, appears to me to exercise a very marked action in promoting tissue growth in weak and sickly children.

The late Warburton Begbie, of Edinburgh, has written most highly in praise of the chloride of calcium as a soluble lime salt of great value in promoting the nutrition, not only of the osseous but also of the soft tissues of the body, and I can thoroughly endorse his statements.

The lactophosphate of lime is another soluble lime salt, and under its administration the bones of animals have been found distinctly to increase in weight and strength.

Ordinary limewater (*Liquor Calcis*) contains half a grain of lime in each fluid ounce, and mixed with five parts of milk forms an excellent nutrient for the tissues. The *Liquor Calcis Saccharatus* is a solution of lime in syrup, so that one ounce contains seven grains of hydrate of lime. In doses of fifteen to forty drops, in milk, or in glycerine and water, it is convenient and very useful. This saccharine solution of lime will often stop vomiting, and it does not appear, when given

with glycerine, to have any constipating effect on the bowels. The ready solubility of lime in syrup I observe is dwelt upon by some Dental Surgeons as an explanation of the fact that sugar and syrup are such destructive agents to the teeth. The lime of the dentine is gradually acted upon and dissolved by the sugar.

I fear I must not trespass further on your time with any speculations as to the causes that lead to faulty nutrition generally among young children. I would only say, is it, think you, in any way connected with the circumstance that so many children are now brought up by hand and fed with the diluted milk of the cow? Cows' milk, as contrasted with human milk, contains 135·9 solids, to 110·9.

Salts in cow's milk, 6·6; in human milk, 1·38.

Sugar " 38·0; " 43·0.

Butter " 36·0; " 26·0.

Caseine " 55·1; " 39·2.

(*Vernois & Beckerel.*)

Asses' milk is far poorer in butter and caseine than cows' milk, but richer in sugar of milk, and is closely similar in chemical composition to human milk.

Further, we should remember that in human milk the lactine, or milk sugar, diminishes in amount, while the salts and caseine increase in amount as the child grows. These are proved facts, that should be remembered by those who have the ordering of the diet of young and growing children. The nutritious caseine of milk is held in solution by a trace of alkaline salt in the milk, and is coagulated by acids and by rennet. The caseine of woman's milk is coagulated by the acid juice of the infant's stomach into light flocculi, that readily dissolve and digest. The caseine of cows' milk coagulates in the child's stomach into a compact lump of curd, not easily penetrated by the infantile gastric juice. To make cow's milk digestible it should be diluted with fresh limewater—three of milk to two of limewater, and then to each six ounces of this mixture one teaspoonful of sugar of milk should be added.

Some recommend that the cows' milk be diluted with an equal part of barley-water (Dr. Eustace Smith). If the child be costive oatmeal tea or bran tea is an excellent diluent of the milk.

Dr. Meigs, of America, gives what I believe to be an admirable form for cows' milk. Thus:

Let seventeen drachms of milk sugar be dissolved in one pint of water, and mix three tablespoonfuls of this solution with two of limewater, two of cream, and one of milk. Thus will be made a nutritious, alkaline, and digestible milk, ful-

filling all the conditions I have laid down for healthy nutrition of both soft and hard tissues, and not likely to be easily surpassed by any of the numerous substitutes that the ingenuity of the present day supplies for the nutrition of infants when unable to obtain the milk of the mother's breast.

SOME POINTS IN DENTAL DIAGNOSIS.*

By WILLIAM HERN, M.R.C.S., L.D.S. Eng.

(Concluded from page 268.)

Neuralgia.—Irritation of a sensory nerve often shows itself as pain at a point remote from that of the seat of irritation.

Pain of this reflected or sympathetic nature is called neuralgia. The fact that the cause may be remote from the seat of pain renders the diagnosis of neuralgia an extremely difficult one. An accurate knowledge of the anatomy and functions of the fifth pair of cranial nerves will go far, however, to assist one to a proper conclusion.

Points to be observed are :

1. *Age*.—Seldom affects young.

History.—Dr. Austie thinks that patients who suffer from true neuralgia have a family history of some of the graver neuroses.

2. *Character of pain*.—Periodicity and intermittence are marked characters.

There are a number of manifestations of neuralgia, consisting of *Sensory*, *Motor*, and *Vasomotor* disturbances, too numerous to mention here.

Seat of pain.—1. Seldom in the teeth themselves. The area of certain terminal branches of the fifth nerve. There seems to be a preference for certain spots or foci more especially the point of emergence.

2. Of the three divisions of the fifth nerve from their bony canals on the face. Supraorbital, infraorbital and mental.

3. Also, according to Mr. Tomes, a focus situated at the anterior superior angle of the parietal bone, the point of inosculation of several branches.

* Read before the Students' Society of the Dental Hospital of London, February 12th, 1883.

4. In or about the temporo-maxillary articulation.
5. Nearly always unilateral.
6. The presence of tenderness over the spinous processes of the upper two cervical vertebræ is, according to Trousseau, constant.

As there are no distinguishing features of neuralgia of dental origin from that arising from other causes, both peripheral and central, and, further, inasmuch as it has been proven that all, or nearly all, of the dental diseases may be exciting causes of the malady, we must arrive at our diagnosis by a process of exclusion. To this end a careful examination of the mouth and teeth should be made; it is not sufficient to take the patient's assurance that the teeth are not decayed, or that he does not suffer from toothache, nor should we satisfy ourselves with an inspection merely of the mouth, but a thorough investigation should be made, and a careful search for local causes, as

1. Carious cavities, or exposures.
2. Periodontitis.
3. Necrosed teeth or bone.
4. Irritating stumps.
5. Irritating fillings.
6. Erosion.
7. Exostosis.
8. Retained or impacted teeth, especially wisdom teeth.
9. Intrinsic calcification of the pulp, and formation of nodules in it.
10. Partially absorbed, or roughened and spiculated fangs.
11. Foreign bodies.
12. Lesions of mucous membrane.

Should you fail to detect any of these or similar causes, the case must now be treated generally.

In Mr. Tomes's opinion, when the pain is most severe in the parietal region, or at the upper part of the temple, the affected tooth or teeth will generally be found in the upper jaw and far back in the mouth. When the pain is referred to the eye it may be found in any part of the upper jaw.

Pain referred to the ear, or region of the temporo-maxillary articulation, is almost diagnostic of a lesion of the lower teeth and generally towards the back of the mouth.

Affections of the lips.—*Herpes* consists of a crop of small vesicles situated on slightly inflamed skin, generally found confined to one side and not crossing the middle line.

Their number and perfectly superficial and unilateral position, together with their fugacious character, will disclose their nature.

Fissures are small elongated cracks on the lips, and may be due to *cold* and *strumous disease*, or are a symptom of *sypphilis*.

The history will assist the diagnosis.

Also the presence of other manifestations if the disease is specific. I quite agree with Mr. Pedley when, in his paper "On Syphilis about the Mouth," he says, "We shall do well to regard with extreme suspicion all cracks, fissures, and sores of any kind whatever about the lips, for it is certain that the secretions from these syphilitic sores are inoculable and may be conveyed from the lips of one patient to those of another, unless extreme caution be observed in thoroughly cleansing all our instruments."

Chancres when situated on the lips do not present the same appearances as elsewhere. They are much larger and flatter. There is not so much induration around.

History will not as a rule be of great assistance as patients cannot, or will not, explain it. The age (most common in the young adult), the rapid formation, the early appearance of swelling and implication of the submaxillary gland—*Bubo*, and the probable appearance of secondary symptoms, within a short time, are sufficient diagnosis.

Cancer of the lip is nearly always of the epithelial variety and almost always affects the *lower* lip.

1. The history of irritation by clay pipes. The slower development.

2. The age, generally late *adult* life (over forty).

3. *The character of swelling*; warty surface producing a foul and offensive discharge.

4. The surrounding deposit of hard substance in the tissues.

5. The often profuse salivation and pain.

6. Gradual involvement of the tissues around, together with the late appearance of the *bubo*, will, I, think justify the diagnosis of malignant disease.

Ulcers of the tongue are affections which are more commonly seen by Dental practitioners than general ones, especially in their early stages, and as some of these ulcers lead to very serious consequences, although the exciting cause may have been a trivial one which can be removed with the greatest facility by the Dental surgeon, it becomes a duty and responsibility of his to diagnose the cause and remove it early.

Irritable ulcer due to the irritation of ragged teeth or dentures.

Characteristics on which their diagnosis rests are:

1. Very painful nature.

2. Foul, shreddy surface.
3. Presence of some induration around, but
4. The absence of any hard deposit.
5. Being generally multiple.
6. Correspondence in position to the source of irritation.
7. Absence of glandular involvement.

Syphilitic ulcers are of two kinds at least :

1. The superficial (secondary) ulcer is related to the psoriasis which appears on the palms of hands and soles of the feet, the characteristics of which are :

(1) Its superficial position on side of the tongue, or painful fissures on its dorsum.

(2) Spreading from similar ulceration elsewhere in the mouth.

(3) In healing they leave milk-white scars of epithelium.

(4) After some time the whole surface of the tongue may become whitish and smooth and the whole organ increased in size.

2. *The deep tertiary ulcer.*

Character.—Appears as a painless, small, and fluctuating swelling on the dorsum of the tongue. On softening they leave a deep, ragged, foul ulcer.

Seat.—Generally on the dorsum and near median raphé.

No glandular inflammation accompanies this condition.

In the diagnosis of each of these specific ulcers the history must be an important guide ; in the first case that of a primary sore, together with other secondary manifestations then present ; in the second case that of a primary sore as well as that of secondary manifestations.

This, coupled with the general induration of the lymphatic glands (amygdaloid), ascertained by the condition of those at the posterior border of the sterno-mastoid muscles will be, I think, sufficient indication of their nature.

Sir J. Paget says : “ The softness of the tumour, presence of white stains, co-existence of other venereal symptoms, are to be our guide in diagnosing syphilis of the tongue.”

In connection with this subject will arise the question of the appearance of the teeth as an indication of hereditary syphilis ; this subject has been worked out and elaborated by Mr. Jonathan Hutchinson with great precision. His test teeth are the incisors of the upper jaw, hence these specific teeth bear his name. Mr. Moon, who has also been a careful and accurate observer, has found a condition of the first permanent molar tooth which is pathognomonic of syphilis. Mr. Hutchinson's incisors are *short* and *narrow*, their angles rounded off, and their edges exhibiting a broad shallow notch. This single broad notch is characteristic.

At the time of their *eruption* the teeth rarely present the notch, but have a thin projecting edge, composed chiefly of dentine of an imperfect development, but the enamel will be found forming a crescentic line, at the base of this, marking the shape and size the notch will assume when this central plate has been worn away, the rough diagrammatical sketches I present will ocularly demonstrate this.

The upper lateral incisors are not so constant in shape, they are often small and peggy but rarely notched.

The canines are malformed as to their cusps, and these show blunted extremities, and at the tip sometimes small, irregular tubercles.

The lower incisors seldom show notches at their cutting edges, but they are often stunted and peg-shaped, at least, are not so constantly found presenting the shallow notch. The teeth generally look softer, worn, and rounded.

MOON'S MOLAR is a tooth characterised by a stunting and narrowing of its coronal portion, dome-shaped.

Mercurial and stomatitic teeth are first molars, incisors, and canines, the enamel of which appears honey-combed, rocky, and PITTED. This commonly takes the arrangement of parallel horizontal lines on the surface. They differ from syphilitic teeth in their *hard*, ragged, and well-defined margins and absence of the crescentic edges and pegged shape.

Cancerous ulcer.

Seat.—Generally the *side* of the tongue. I would here remind you, gentlemen, of the necessity of early and complete removal of all causes of irritation of the tongue in patients who are past middle age, as there can be no doubt that the continued irritation of a ragged tooth, or that of an improperly constructed and finished denture, has been a common exciting cause of epithelioma of the tongue.

Age.—Generally attacks those in late adult life, may, however, commence earlier.

Character.—It commences as a small ulcer, soon enlarges, and begins to fungate, rapidly involving the floor of the mouth.

The sore has a foul and shreddy surface, covered with a very offensive discharge.

Often profuse salivation.

There is great induration around the deposit, extending indefinitely into the substance of the tongue; also severe and continuous pain.

Difficulty of articulation and mastication will be complained of.

Involvement of the submaxillary glands, and later on those behind the angle of the jaw.

Occasional and alarming attacks of hæmorrhage.

In the diagnosis the age, character of the sore, involvement of the glands, the severe pain, are the chief points.

Before concluding my remarks I would like to add a few words relative to diagnosis of the more common and ordinary cases of every-day practice.

Inflammation of the pulp, of which we recognise two forms.

1. *Acute pulpitis.*—*History.*—More or less sudden accession of violent pain of a throbbing, darting character, causing intense agony.

Seat.—The pain may be confined to the tooth or commencing in the tooth radiate to the sides of the face and head. Pain comes on suddenly while masticating, or soon after the insertion of a stopping over an exposed or nearly exposed pulp. After several attacks the pain changes to a dull ache. There is not necessarily any tenderness on percussion of the tooth in the early stages, although it will be hypersensitive to thermal changes, a stream of cold water, blast of hot or cold air.

Cause.—Generally due to exposure of the pulp by caries, we must therefore first carefully look for this condition. In settling this question of "exposure or non-exposure of the pulp" in a carious tooth, it is a good plan, I think, to do so with a little less energy than I have seen commonly practised in our extracting-rooms. The method I prefer is to take a piece of cotton wool or amadon in the plugging forceps and gently pass this across the floor of the cavity in the position of the probable exposure, this I consider decidedly preferable to a sharp and vigorous exploratory thrust of a fine probe, into a pulp which is inflamed and consequently hypersensitive.

The approval of my suggestion and its employment is better appreciated after an individual experience of the two methods of research, but I feel sure patients (even hospital patients) would be thankful to you for the little extra trouble the carrying out of the first method entails.

Pathology.—In early stages the pulp would be found deeply injected, red, and interstices filled with inflammatory products. Later, when the inflammation has gone on to suppuration the pulp will be found bathed in pus of a very offensive and characteristic odour.

2. *Chronic inflammation of the pulp* manifests itself by pain of an erratic and intermittent character, neither very severe or of long duration. The pain is often brought on :

1. By changes of temperature.
2. Change of posture, *e.g.* the recumbent position.

Time of accession.—1. After taking food, especially sapid substances.

2. Very commonly soon after retiring to rest.

Pathology.—The pulp will probably be found exposed, and the surface ulcerating; the exposed surface congested and of a deep red colour.

The pulp at the exposure is very sensitive to the touch, and bleeds readily on being disturbed.

Necrosis of the pulp.—It will often be difficult to make a diagnosis of this condition. The following points will assist: The history of:

1. A blow.
2. Acute pulpitis ending in suppuration.
3. Acute fevers.
4. Torsion of a tooth; or,
5. Transplantation or replantation.
6. Stopping on a nearly exposed pulp.
7. Presence of a periostitis or alveolar abscess.

It may give no diagnostic symptoms. Generally a history of occasional and fugacious attacks of periostitis, especially when the patient is out of usual health.

Signs.—Tooth is commonly discoloured, ashey grey, and has more transparent appearance; it does not respond as readily as its neighbours to thermal tests, such as blast of cold air or stream of ice-cold water, blast of hot air or contact with heated bodies.

The diagnosis must be cleared up by drilling into the pulp cavity with the engine, or removing any stopping with which the tooth has been filled. In drilling into a sound tooth to answer this question, it is a good plan to work the engine rapidly, so that sufficient heat shall be generated by the rapid revolution of the drill or rose-head to inform the patient of its approach should the tooth be still alive; if, therefore, the pulp shows signs of life you can desist and repair the breach by stopping.

In connection with this subject of dead teeth there still remains something on which we cannot pronounce a decided diagnosis. It is the question brought up at a recent meeting of the Odontological Society by Mr. Charles Tomes, whether the inflammation at the roots of dead teeth is *septic* or *aseptic* in origin.

In *periodontitis* or dental periostitis our diagnosis rests on the physical signs; the history, however, will assist.

History.—1. Injury, *e.g.* recent blows, forcible occlusion of jaws.

2. Pressure of adjacent teeth.
3. Fever.
4. Irritants applied to gums.
5. Extension of general periostitis.
6. Suppurative pulpitis.

Course.—1. Slight uneasiness and tension about the particular tooth.

2. Pressure gives relief.

3. Uneasiness is soon followed by dull heavy pain; tooth feels longer, and becomes very sensitive to pressure.

4. Pain on pressure also on gum opposite apex of fang.

The diagnostic signs are few:

(1) Tooth is loosened, and

(2) Very painful on percussion. If late

(3) Swelling on gum opposite apex of root.

In conclusion, gentlemen, I thank you for the courteous attention you have paid to a paper which falls far short of doing adequate justice to this important subject, feeling assured you have already diagnosed what I am only too painfully conscious of, viz. hurried composition and consequent *errata*, but when I tell you the greater part of this paper was written in two evenings you will appreciate my position. I regret that time has not allowed me to embrace in my paper many other very important subjects, but I shall be only too pleased if I have in any measure succeeded in directing the attention of our younger members to the cultivation of the science and art of diagnosis.

My paper was advisedly worded "Some Points in Dental Diagnosis," so that I hope the *cætera desunt* will come out in a free discussion.

CONTINUOUS GUM FACINGS, AND GAS FURNACES FOR WORKING THEM.*

By A. B. VERRIER, L.D.S.Ire.

MR. PRESIDENT AND GENTLEMEN.—It is not my intention to attempt to give a history of continuous gum work, because, in the first place, to a greater or lesser extent you are already acquainted with its general merits and working; and in the second, it is neither new, nor any invention of mine. All I purpose—with your kind indulgence—is briefly to explain

* Read at the Annual Meeting of the Odonto-Chirurgical Society, March 13th, 1883.

the results of my own experiences and discoveries in connection with my process of CONTINUOUS GUM FACINGS, for vulcanite or other bases, of which I believe I *am* the original introducer, and the apparatus I have invented and found most useful in the manipulation.

I may first state that I have with a view to demonstrating the more thoroughly—and it is essentially more a matter of *showing* than *explaining*—without occupying your time unnecessarily, prepared several specimens of the various stages of the work, ready for their *next process*, by which I shall be enabled to illustrate each and every stage in a very short time. This arrangement will also save me some anxiety and possibly mortifying disappointments. For I presume you all know somewhat of the unenviable feeling that await the oft-met failures of, especially the amateur, lecturer, when his necessarily hurried practical experiments break down, often perhaps from the very anxiety that prompts him to hope for special success. I will therefore entreat your fullest indulgence for whatever may not turn out as I desire, freely admitting at the same time that I have done as much as possible out of your sight, to prevent any avoidable disaster, of which the completeness of my demonstration would admit. Those of my hearers who have read the articles recently published from me in the 'British Journal of Dental Science,' will, I believe, have some advantage in following me to day, and those who have not will probably gain something by doing so, as my views are there expressed on portions of the work that I cannot now touch upon.

I will also beg that all specimens handed round may be handled with extreme care, as throughout the working is one of great delicacy.

The principal difficulties of the *old style* of working may be treated under three heads: firstly, the tendency of the continuous-gum body to shrink in firing and so displace the teeth and interfere with their arrangement. Secondly, the cracking of the muffles, causing the "gassing" or discolouring of the work by the ingress of sulphur or smoke, and the cracking of the teeth or gums in attempting to cool the work quickly to save time; and thirdly, the immense expenditure of time—absolutely waste—in raising and lowering the heat required for each firing. The first of these I have overcome by making a compound for investing the cases for *first* firings, of:

Coarse plaster of Paris	.	.	.	2 parts	} by bulk.
Powdered asbestos	.	.	.	1 "	
Finely sifted fire-clay	.	.	.	1 "	

I find that the fire-clay prevents shrinkage, although it

has the trifling disadvantage of adhering rather firmly to the glazed surfaces of the teeth in firing, and requiring longer time to set. The one I prevent by first covering the teeth with a thin film of *neat* plaster of Paris and allowing it to set, before investing; but, should any particles adhere, they can be readily removed by being rubbed with a little of the gum-body, or a piece of moistened cane. To overcome the other I usually invest a case and leave it all night to harden and yet find it saves time, as I rarely have any breakage, even in fitting platina wires—for I use platina as a strengthener for after wear, and not to prevent shrinkage—I have also used platina wire gauze with marked beneficial effect.

The second, the cracking of the muffles and consequent troubles, have been minimised by the simplicity of regulating and controlling the heat in the furnace; but should it happen, the upper muffle in my double furnace may be at once substituted for the lower and a reserve one brought into use, and afterwards the crack may be repaired by well moistening it and filling in with a compound of:

Fire-clay, very finely powdered	.	.	2 parts	} by bulk.
Gum body	.	.	1 „	
Finely powdered asbestos	.	.	1 „	

in a condition of paste, this at the next firing will harden and make it as sound as ever.

The third, the economising of time, is where I feel my labours are most likely to be of benefit, because without that, beautiful as the work is, I feel it could never have come into general use; and this I have accomplished, after years of steady perseverance, by gradually altering the shape and reducing the bulk of my furnace, until I have brought it to its present easily managed proportions. You will see presently that I can usually bring up the temperature in from five to ten minutes, and (except for the final firing) it can be cooled in about the same time.

As a case often requires several firings, this is of paramount importance. I remember with the old, cumbrous coke furnaces being *many hours* bringing up the heat and even longer in each cooling, making a *prodigious undertaking* of it, with a good prospect of being roasted alive into the bargain.

I may mention that after the first firing there is no further need of investing the work, it only requires to be judiciously supported with platina wire on the stage within the muffle; indeed, I can now dispense with any investment whatever even with the first firing, but it requires practice.

I will now treat of what little difference there is in preparing cases, for it is almost identical with that for vulcanite or celluloid, except that, as there is no objection to showing

gum—indeed, quite the reverse—the teeth have only to be selected to harmonise with the crowns of any natural ones remaining, and may be mounted irrespective of the existing natural gum ridge, in fact, built out on wax as the artistic taste of the operator may suggest, teeth irregular, both in circle and height, and the gums either smooth and even or rising more on the upper laterals, or undulating, or with thickened margins, as may be most suitable to each case. The case is then to be removed from the model, the surfaces of the teeth *filmed* with neat plaster and (when this is set) invested to about half an inch in thickness in the compound already mentioned, teeth downwards, so that a ridge stands a little above the wax all round its margin (specimen). When thoroughly set the wax may be boiled out and platina wires adjusted if required, next, *oil the mould*; this is an important, although small matter, as it prevents the too hasty absorption of moisture whilst packing the gum-body. For packing this material (which is a fine powder, I prefer Dr. Allen's) it is to be made into a thin paste with distilled water and carried to the mould and guided round the roots or necks of the teeth with a camel-hair pencil, thickening it to any desired degree, absorbing superfluous moisture with clean blotting-paper, and condensing with agate burnishers—the more thoroughly this is done the less the shrinkage. When thoroughly dried by gentle heat it is like this which I now pass round (specimen), and ready for the primary firing, at which time all soldering of platina may also be accomplished, by moistening pellets of fine gold with borax water and placing on all the joints (which must be in absolute contact), in rather liberal proportion, as platina absorbs a considerable amount. The furnace heated and gas put out, the muffle, with the case in it, is to be gradually introduced and then the heat gently increased until the fine gold fuses, when the gas may be turned out and the muffle gradually removed. When nearly cool the case may be immersed in hot water to facilitate the removal of the investment, brushed clean, and any particles removed from the teeth as described.

On examination it often happens that flaws or cracks of surface are found, or, on trying on the model, edges may be found weak or imperfect; any and all these defects may be remedied or extra contour given, by adding more gum-body as before and firing again without investment. There is no limit to the number of firings that may be given with care, but with a little experience more than two are rarely necessary and generally only one. At this stage it is advisable to do any grinding or fitting to the model, if required, after which it only remains to add the gum-enamel or colour—for

until this all is white—this is done in like manner to the gum-body, leaving it very thin where the gum is to appear pale, and a little thicker between the roots and round the margin of the enamel of the teeth. With a moistened camel hair pencil I prefer to wipe a little division between the gum-enamel and tooth, leaving an actual free edge to the gum, also to carefully remove any particles of gum-enamel from the surface of the teeth. Then fire as before. This firing requires a lesser heat than the others; I prefer, however, not to glaze the gum-enamel too greatly, as I think it gives a more natural appearance to remain a little rough. Experience enables one to judge when the gum-enamel is glazed, but until this experience is gained it is better to place a little gum-body, as a test-piece, on the flattened end of a long piece of platina wire and fire it with the case, then a little gum-enamel being put on; it can be inserted through an aperture in the door of the muffle and withdrawn from time to time and examined, until the work is *seen* to be completed. Then the gas may be turned off, but the whole should be allowed to cool *without removal* to thoroughly anneal the mineral body which renders it much tougher. Should a second case be ready for finishing at the same time, however, the muffle may be withdrawn from the lower furnace and placed in the upper one, whilst that from the upper (which should have had the second case within it getting heated ready) can be placed in the lower or firing furnace, and completed, when both muffles and cases can be left to cool thoroughly. A great saving of time. I need hardly say, where cases are small enough for two or more to be fired at a time in the same muffle, it is an additional saving of time and labour and quite unobjectionable; equally so is packing the upper muffle with cooling cases where practicable.

A few words on the all-important subject of the management of the heating apparatus, and I will no longer tax your patience. I use Mr. Fletcher's injector burner, which must be adjusted by means of the screw nut that supports it in the slab, so that its nozzle is tight against the margin of the hole in the base of the furnace, as gas must on no account be allowed to escape between the slab and the furnace itself. Success may almost be said to depend on this, so important is it. There is no fixed rule of proportion, but on the due admixture of gas and air depends the being able to raise the necessary heat. The gas can never be depended on for uniform quality. Benzoline vapour is far more reliable, but more dangerous, otherwise I prefer it; gas varies with different makers, and at different times with the same maker, so that the operator must learn to depend on his own judg-

ment entirely. When working properly it should have a sharp roaring sound, and (with the single furnace) the flame should rise out of the hole in the top about two inches, be very clear, indeed almost colourless, with a pale yellow margin, perhaps aptly described by a friend as "invisible yellow." With the double furnace you will notice, by trying without a muffle, that when correctly burning there will be an intense brightness of the heated inside surface of the furnace. A rather sharp tone is a proper indication, whilst a spurting blue flame with a hollow roaring tone must be avoided. Practically, the more air that can be consumed in proportion to the gas the greater the effect and heat, but it may be remarked that a dark ring at the bottom of the muffle indicates too much air. The muffle should appear uniformly heated, if otherwise it must be shifted over the centre of the flame or it will be liable to crack.

I have now, Mr. President and gentlemen, only to thank you for the courteous reception you have given my crude and imperfect attempt at information, which, I trust, will be elucidated by the demonstration it will now be my privilege and pleasure to make before you, and to assure you that I shall do my best to answer any questions that may suggest themselves to you, or to explain to the best of my ability any difficulty or doubt that may arise.

CYSTIC TUMOURS OF THE JAWS, AND THE ETIOLOGY OF TUMOURS.*

By F. S. EVE, F.R.C.S.,

ERASMUS WILSON LECTURER AND PATHOLOGICAL CURATOR OF THE MUSEUM OF THE COLLEGE, AND SURGICAL REGISTRAR TO ST. BARTHOLOMEW'S HOSPITAL.

(Continued from p. 260.)

LECTURE II.—ON SOME POINTS IN THE ETIOLOGY, GENERAL CHARACTERS, AND RELATIONS OF TUMOURS.

THE term tumour, formerly employed in the wide sense indicated by the signification of the word, a swelling, is now exclusively applied to the various overgrowths of parts of the nature of new formations, the origin and increase of which is unattended by the course of events known as inflammation.

* Lecture delivered at the Royal College of Surgeons of England.

From the hypertrophies and inflammatory new formations true tumours are chiefly distinguished by the diversity from the type of the normal tissues which they exhibit in their structure and relation to surrounding parts. Possessing in the highest degree a proliferative capability, they grow as a general rule continuously, with slight power of development, and without serving any purpose or utility in the economy. A true tumour may therefore be shortly defined as an atypical new formation not correlated with or adapted to the surrounding parts, and the causation of which cannot be solely referred to an ordinary inflammatory or reparative process.

In order more completely to comprehend the special characters of true tumours, let us briefly compare them with the other overgrowths of parts.

Taking the more common examples of hypertrophy, as of the voluntary muscles, the heart, the urinary bladder, and kidney, we find that the overgrowth in each case is the result either of increased exercise of the part or the necessity of greater power. The hypertrophy in all cases serves a definite purpose, and adapts the organ to the emergencies occasioned by disease or stress of work; and "to whatever extent it may proceed, the part will maintain its normal form and structure." A familiar example of the contrast between a physiological hypertrophy and a tumour is an hypertrophy of the uterus, and a myo-fibroma occurring within its walls. The enlargement of the uterus takes place throughout the entire organ, and the newly-formed muscular fibres preserve their normal order and arrangement; whereas the tumour affects only a small and, even from the commencement of its growth, a distinctly circumscribed area; the muscular fibres are arranged irregularly, often interlacing, and are intermixed with a large quantity of fibrous tissue. Again, the hypertrophy of the uterus has a direct purpose, either the expulsion of a fœtus or of a pedunculated fibroid as the case may be; and the organ subsides to the normal size after its accomplishment. The tumour, on the other hand, is characterised by its continuous and purposeless increase.

Some tumours are atypical in their form and relation to surrounding parts rather than in their minute structure. For example, the fatty tumours are indistinguishable in their minute structure from the normal accumulations of fat, yet they present a remarkable diversity in type from the rest of the adipose tissue in their peculiar and characteristic shape, and in their isolation by a capsule.

The excess of growth observed in the hypertrophies of

limbs and various organs is distinguished from tumour-formations in that it is abnormal in the amount rather than in the kind of tissue produced. The part or organ maintains its natural form, but on a larger scale; and, in its minute structure, the component elements preserve closely their normal type and relative position. These distinctions, although of general application, lose much of their force when applied to some forms of tumour, which occupy an intermediate position between the hypertrophies and new formations. Among these are the fatty outgrowths described by Sir B. Brodie, which have "no distinct boundary; you cannot say where the natural adipose structure ends and the morbid growth begins." They most commonly occur beneath the chin and symmetrically placed on each side of the back of the neck, and are sometimes amenable to treatment.

When we turn to the malformations by excess, difficulties are met with in distinction and classification, which we shall find in the highest degree suggestive in considering the causal relation of the anomalies and variations to which the body is liable. It is none the less difficult to draw a sharp line of separation between the tumours and inflammatory new formations, in fact, Cohnheim* states that it is only by means of their etiology or causation that they can be sharply and precisely divided.

It is not easy, for example, to distinguish with the naked eye some flat over-growths of bone or osteophytes from a heaping up of callus, and with the microscope this is impossible; there is even a strong resemblance in general architecture, as seen under the microscope, between the tissue of growing and incompletely-formed callus and that of an osteosarcoma.

There are, however, some other less distinctly-marked characters by which the inflammatory new formations may be distinguished from the true tumours. The inflammatory process is capable of producing the common connective tissues, as fibrous tissue, fibro-cartilage, and bone, and even epithelium, as is seen in the production of the ordinary verrucæ and condylomata; but its potentiality does not extend to the production of many of the higher forms of tissue, such as muscle, gland, and brain-tissues, which form the constituents of some tumours.

Again, the inflammatory new formation ceases on the subsidence of the cause which gave rise to it, and then may become reabsorbed. Or, if conservative in its action, and formed for the repair of some injury, it tends to assume a

* 'Allgemeine Pathologie,' p. 631.

higher type of organisation, conforming in its structure to that of the surrounding parts.

But, just as gradations exist between the tumours and the hypertrophies, so are forms also observed intermediate between the tumours and the inflammatory new formations. By what means other than their causation are we capable of determining to which group keloid belongs, or the fibrous tumours in the lobules of the ears following irritation from the wearing of ear-rings? Both of these new formations of connective tissue tend continuously to increase, and both may recur locally after removal.

Much stress was formerly laid on the independence of tumours of the nutritive and physiological processes of the body generally. In some instances this is strikingly manifested, as in the case quoted by Sir James Paget, in which fatty tumours of considerable size were found in the mesentery of a patient, "from whom in the extreme emaciation of phthisis, nearly all the fat was removed."*

Some other observations, however, point equally strongly in an opposite direction. I met with a case in which an encapsuled adenoma of the breast was filled with milk having a normal appearance and microscopic characters. The tumour was removed shortly after lactation, and the breast itself contained no milk; so that I think there can be no doubt of the milk being formed within the adenoma itself. Virchow records a similar case. I have also observed mucous-secreting goblet-cells lining the gland-tubes of a mucous polypus of the rectum.

The well-known fact that the multiple exostoses and enchondromata of bones cease to increase at the period of cessation of the growth of the bones, indicates that their nutritive activity is closely bound with that of the osseous tissue. The acceleration of the growth of uterine and ovarian tumours which, Leopold† observes, occurs during pregnancy, is another instance of the influence of a physiological stimulus upon the growth of tumours.

(To be continued.)

A LABOURER, aged forty-two years died at the General Hospital, Birmingham, on March 2nd, whilst under the influence of chloroform. The anæsthetic was administered in order that a tumour might be removed. Before the operation was performed, however, the man died.—*British Medical Journal*.

* Paget, op. cit., p. 378.

† Leopold, "Experimentelle Untersuchungen über die Aetiologie der Geschwülste," 'Virchow's Archiv,' Band xxxv, p. 318, 1881.

THE PROBABLE EFFECTS OF PROSPECTIVE MEDICAL LEGISLATION ON THE DENTISTS ACT OF 1878.

By Dr. SMITH, F.R.C.S.

As some of the members of the branch association might not be aware of the deliverances of the Royal Commission upon the granting of medical degrees, I have thought that it might not be amiss to bring before them this subject, in reference to the position in which the Dental diploma might thereby possibly be placed. No precise line of action in respect to the Dental license of the corporations has been enunciated by the Commission, but from the close connection between the Dental and the surgical licenses, the privileges conferred in both cases being merely a major and minor degree of right to exercise the self-same offices—being, in fact, so far convertible as quantitative and not qualitative in their distinctive character—it may fairly be inferred that such material changes as are proposed in the granting of the one qualification must, in order to be consistent, also affect the other. It is therefore more as a preamble to further action, if necessary, on the part of the Association, that I would now ask your attentive hearing to a *resumé* of what is contained in the report to which I refer.

In the report of Her Majesty's Commissioners appointed to inquire into the granting of medical degrees, &c., and presented to both Houses of Parliament by Her Majesty's command, there appears under Clause 15 of Section I, "That there shall be one Medical Council, and that in each of the three divisions of the United Kingdom there shall be a Divisional Board, representing all the medical authorities of the division; that the right of admitting to the 'Medical Register' and a general control over the proceedings of the Divisional Boards shall vest in the Medical Council; and that subject to such control, each Divisional Board shall in its own division conduct the examinations for license."

In Clauses 53 and 58 of Section V, the power of conferring a license or the right to practise medicine or surgery is proposed to be withdrawn from the present licensing boards, and to be wholly transferred to a Divisional Board

* Read before the Scottish Branch of the British Dental Association, March 13th, 1883.

or Boards of State Examiners appointed by the Medical Council.

The consideration of "privileges conferred upon registered practitioners, and restrictions, disabilities, and penalties imposed upon practitioners not so registered," occurs under Section VI, and under Clause 63 of the same section it is reported that "The Association of Surgeons practising Dental Surgery appeared before us by their president, asking that qualified Dentists not on the 'Medical Register' should be prevented styling themselves 'Surgeon Dentists.' We do not see our way to make such recommendation." That is, they are to be considered as entitled to the application of "surgeon" as an affix or prefix. And again, at Clause 64 of the same section, it is reported that "The British Dental Association have asked for direct representation upon the Medical Council. We cannot recommend that this should be granted." That is, that Dental surgeons are to have no voice in the Medical Council, which has yet to decide whether the corporations are to continue to grant them an absolute license to practise, or whether the Divisional Board is to do so.

Both of these clauses involve considerations of some importance and interest to those who have obtained the diploma of "Licentiate in Dental Surgery" from the Royal Colleges of England, Scotland, or Ireland respectively, and the Faculty of Physicians and Surgeons of Glasgow.

It will be seen that, according to the decision of the Commissioners in Clause 63 as quoted, they hold that qualified Dentists, who have passed such an examining board as that of a Royal College of Surgeons, are entitled to assume the affix of Surgeon or the title of Surgeon Dentist or Dental Surgeon, and such a decision seems judicious and proper, but it may entail that all such qualified Dentists, in being thus entitled to use the appellation of "Surgeon," will come to be on a footing with the Surgeon Accoucheur, the Surgeon Apothecary, the Surgeon Oculist, or Surgeon Aurist—that the holder is a Licentiate in Surgery *ad valorem*, that he is legally qualified to practise circumscribedly in the healing art, while although a departmental surgeon and his sphere of practice regional, yet its limits cannot be clearly and exactly defined. In this manner a Dental licentiate would be entitled by his diploma to practise Dental Surgery *in extenso*, and what is termed Dental Surgery may, from the examinations he is required to pass, be inferred to include the treatment of diseased conditions incidental to, or associated with, diseases of the teeth, as well as the mere local affections common to these organs.

Now, under Section V of the Report, and at Clause 53, it is stated that, "If our recommendations be adopted, the statutory privilege of conferring a medical license will no longer attach to the diplomas and degrees of the medical authorities, and in a certain sense their importance will be diminished;" that is to say, it is proposed to deprive the existing licensing bodies of their power to confer by their diplomas any right to practise, and to transfer all that power to the Medical Council acting through a divisional board, or, in other words, a central or state board of examiners. In view of such proposed changes as are here referred to being adopted in respect to medical and surgical diplomas and degrees, the question naturally suggests itself—will this affect, and if so, to what extent, the Dental diploma of the Royal Colleges and other boards?

The limitations of the practice to which a Dental Surgeon is confined are, as we have seen, as yet *sub judice*. The diploma confers a right, however, to practise medicine and surgery to a certain extent; but what makes the matter so important, is that it is to an unknown extent. This privilege to practise is at present conferred by the licensing boards absolutely, and wholly irrespective and independent of any other examining board whatever. But, with the power taken from them of conferring a right to practise with their surgical diploma, is it consistent or reasonable to expect that, without some alterations or modifications in the matter, they can continue to grant in their Dental diploma a right to practise, if not in all, at least in many affections which must necessarily occur in both medical and Dental practice, and the treatment of which must be common to both; inflammation of glands, sinus of the cheek, neuralgia, dyspepsia, disorders of dentition, these, among others, are common complications of Dental diseases, which would be thus legitimately treated upon the strength of a Dental but not a surgical diploma; and it is not likely that a line of procedure so anomalous would be permitted to go on unmolested.

These circumstances would seem to suggest that the branch associations ought to be prepared to meet several different aspects in which the matter may present itself for their consideration.

Will candidates for the Dental diploma, like candidates for the surgical diploma, be required to pass, in whole or part, a state or central or divisional board's examination? At Clause 43 of Section IV it is stated that the final examination in medicine and surgery ought to be conducted by the divisional boards alone. This, if carried out, might render it difficult for the corporation to find gentlemen not in the

divisional boards, ready and willing to undertake the special examinership on these subjects at the Dental examinations exclusively, the small number of candidates and the cost of the diploma not affording any probability of adequate remuneration for such services. This last consideration is, of course, taking it for granted that the divisional board's examination will not be imperative, but in that case again it implies a possibility that the Dental license may be so subordinated and restricted that examination by the divisional boards will not be considered worth while. In the event, again, of Dental candidates requiring to pass the divisional board in the same manner as surgical ones, the special Dental curriculum may, as a solatium to students, be materially relaxed or modified, or perhaps dispensed with altogether; and, as in the preliminary literary examinations, proficiency be attested by examinations alone.

Lastly, it would be well to take into consideration the possibility from the limited number of candidates for Dental diplomas and the comparatively redundant number of Dental licensing boards, that one central board may in the end be deemed sufficient for the three kingdoms so far as the Dental diploma is concerned.

I think I have now touched upon most of those points in which the report of the Royal Commission might possibly lead to the Dental diploma being affected, and the consideration of which appears to be a subject coming within the legitimate business of the Association.

A discussion followed, and eventually a committee was appointed with powers to take what action they thought fit for sustaining the present Dental curriculum in force, and preventing the substitution for it of a purely medical one, and to watch most particularly that the special training in the Dental hospital be insisted upon as a *sine quâ non* for the Dental diploma.

Mr. Bowman Macleod then read a paper on "The Proposed Dental Benevolent Fund," the result of which was that, with one exception, all present intimated their intention provisionally of contributing a donation of five guineas each, with an annual subscription of one guinea. The meeting then terminated.

British Journal of Dental Science.

LONDON, APRIL 2, 1883.

IN our last issue we drew the attention of our readers to an annotation that appeared in the 'Lancet' which reflected unfavorably upon the position of the Dental Surgeon, and we are pleased to see that some remedy has been made by allowing the opinions of those well fitted for such a purpose to be published in the form of correspondence, in reply to a letter written by Mr. Hamilton Cartwright, who supported this somewhat unjust attack. We hear that considerable modification was obliged to be made in Mr. Hutchinson's communication before the editor of the 'Lancet' allowed it to appear, but the way in which he shows how the profession will ultimately be improved by the Dentists Act of 1878 is, perhaps, one of the happiest conceptions that could have been created for the pages of the 'Lancet.' At a time when medical legislation is about to be altered, it is most desirable that the clearest rendering of our position should be laid before the world. The draft of the Medical Acts Amendment Bill is now before the House of Lords, and so far very little alteration has been made to that which is already law. We see in the last paragraph of Section 28 the following:—"This section shall not prevent a person registered in the 'Dentists' Register' under the Dentists Act, 1878, from taking or using any name, title, addition, or description, which he is entitled to take or use under that Act;" and in Section 72, "There shall be repealed so much of Section 4 of the Dentists Act as provides that a prosecution for any of the offences above in that Act mentioned shall not be instituted by a private person except with the consent of the General Medical Council or of a Branch Council, and a

prosecution for any such offences may be instituted by a private person accordingly.

It shall be lawful for Her Majesty at any time after the said appointed day to declare by Order in Council that Section 28 of the said Dentists Act shall be in force on and after a day to be named in such Order, but in the meantime, and until such Order has been made, and before such day aforesaid, such section shall not be deemed to be in force.

Any power given by the Dentists Act to the General Council may, on and after such time as the Medical Council comes into office, be exercised by the Medical Council.

Save as in this Act mentioned, the Dentists Act, 1878, shall not be affected by this Act.

It is also pointed out that any scheme for the conjoint examination of medical students shall also apply to Dental examinations, the new Examining Boards coming into existence on and after January 1st, 1885, so that as the Bill at present stands there is no fear for anxiety.

Manipulative Miscellany.

All instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month, they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits, and without any intention or wish to pit one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

A NEW METHOD OF PIVOTING TEETH.

MESSRS. ASH AND SONS have sent us a specimen illustrating Dr. Redmond's new method of pivoting teeth. Its principle is in the artificial tooth being screwed to the root instead of being carried by the usual pin. The root is prepared by filing a V-shaped groove one eighth of an inch deep, extending over the whole surface. A piece of plate

is now fitted to this surface and the tooth invested with a thick metal back built up to form a solid mass into which the nut can sink so that it does not touch the tongue. Into the canal a screw is fixed directed backwards, and when the artificial tooth with its metal back is prepared it is placed over the screw and by means of the nut is kept perfectly firm. Knowing how vibration will loosen any nut, we hope Dr. Redmond has some means of securing it. The idea is good, but perhaps the greatest credit is in substituting the V-shaped groove for the ordinary flat surface, it being the common experience that pivot cases are liable to slight rotary movement after they have been worn some time.

DR. STOKES' NEW CLAMPS.

WE brought under the notice of the profession in November last some clamps invented by Dr. Stokes which very successfully held bibulous paper round the molars of the lower jaw. We have now one for the upper molars which consists of the ordinary spring clamp with two wings attached to the embracing margins. Bibulous paper if wound through the wings will be held tightly against the sides of the teeth operated upon, and we cannot but speak in the same favorable terms we applied to those for the lower teeth.

APPROXIMAL FILES.

To enable the edges of contour fillings to be successfully worked up these files have been introduced. They very much resemble interstitial pluggers, being tapered and curved for each side; their object is apparent and they will be found extremely useful in certain cases. We are told that other patterns will follow from the house of S. S. White where they are made. Mr. Rutterford submitted the pattern for our inspection.

G. WALKER'S AUTOMATIC GAS EXTINGUISHER.

THIS is an apparatus, designed by Gilbert Walker, L.D.S., for turning off the gas of a vulcaniser at any pre-arranged time, by means of an alarum clock. Its distinctive features are :—Its simplicity of construction ; its non-delicacy of parts ; its admitting of being attached *direct* to iron or metal gas-pipes (avoiding the danger of leaving the gas turned off on flexible rubber tubing, so much objected to by fire insurance companies), or being hung on two nails, at the desire or convenience of the user ; its power of action ; its construction admitting of the gas-way being perpendicular, horizontal, or at any angle most suitable for connecting to existing gas-pipes. The clock, which is arranged with a second dial, enabling the time for the extinguishing of the gas to be predetermined to *a minute*, is in no wise a fixture to the apparatus, so can be removed and used for all ordinary purposes, only requiring to be hung to the apparatus when vulcanising.

We do not see that it is any more efficacious than other inventions for the like purpose, but its simplicity is certainly most ludicrous.

A NEW GAS-BOTTLE STAND.

UPON going to press we have received what will ultimately be a useful form of nitrous oxide gas-bottle stand from Messrs. Ash and Sons. It consists of an ornamental gun-metal base ring, ten inches in diameter, which is supplied with hinges to enable it to be packed in a smaller space. Screwed to the ring are three iron uprights converging towards a smaller iron ring which can also be separated. The screws which attach the upper ring to the standards are prolonged inwards to enable the bottle to be fixed. The ordinary foot-plate acts as the key.

Reports of Societies.

ODONTO-CHIRURGICAL SOCIETY.

AT the usual monthly meeting of this Society, which was held on the 8th ult., Dr. Smith, F.R.C.S. Edin, President, in the chair, Mr. G. W. Watson read a paper on the "Pathology and Treatment of Alveolar Abscess."

After describing briefly the etiology and pathology of the disease, Mr. Watson went on to speak of its symptoms and complications, especially the formation of fistulæ and abscess of the antrum, and of the abscesses opening on the neck or throat which might result from a diseased lower wisdom tooth, and the true nature of which was not unfrequently overlooked by medical practitioners. He then referred to the frequent occurrence of absorption of roots and of the formation of exostoses, the two processes being often coincident, and handed round specimens showing nodular deposits of very hard greenish tartar at the extremities of the roots, a condition which he believed was not alluded to in any of the text-books.

Alveolar abscess had become far more amenable to treatment within the last ten years or so, partly owing to its pathology being better understood, and partly to the discovery of so many useful antiseptics and the antiseptic system of treatment. Teeth which at one time were condemned to extraction could now, by antiseptic treatment, be saved and made useful again. The antiseptic treatment, however, to do good must be thorough; the saliva and all moisture should be excluded by means of the rubber dam, or other appliances, and this not only at the time when the abscess sac is injected, but at every dressing of the tooth the same precautions should be adopted, otherwise little good would result.

The treatment to adopt would depend on the stage at which the abscess is seen, and whether it be acute or chronic. To simplify matters he would divide them into two classes:—1st. Abscess with a pus-discharging fistula. 2nd. Abscess sometimes called blind, or without any external opening. Those of the first class were by far the easiest managed, owing to the readiness with which medicinal agents could be applied to the root of the disease. If the

tooth has a filling in it, this should at once be removed, the canals freely opened up and cleaned thoroughly with a weak solution of carbolic acid (a weak solution being used to prevent coagulation of pus cells, if such should be present in the canals), a drop or two of the same solution should now be inserted into the cavity, and a piece of unvulcanised rubber worked up and down like a piston in the cavity, which generally forced the fluid through the sinus: this having been accomplished, pure carbolic acid (the cheek being protected) might be used, after which the tooth can be dressed, each root separately with pieces of cotton wool or silk, dipped in what he considered the best and least irritating of antiseptics—a paste of eucalyptus oil and iodoform freshly mixed,—and a piece of cotton wool dipped in sandarach varnish applied over this. One or two such dressings usually sufficed, although he had filled teeth right away after injecting the sac, and they had done wonderfully well; still it was better practice to give them several dressings before filling, and if need be, another injection of the pure carbolic. Unless the pure carbolic acid passed freely through the sinus, all the dressing that can be applied would do little permanent good, except in a few rare cases. For premolars and single rooted teeth the hypodermic or abscess syringe answered admirably for injecting abscess sacs. Inserting the syringe into the canal of the tooth, and surrounding the tube with cotton wool dipped in sandarach solution or making it tight in any other way, the antiseptic fluid could be readily forced into and through the sinus. In the case of posterior approximal cavities in the molar teeth of upper or lower jaw, he was in the habit of filling up the entrance of the canals with cotton wool, stopping the cavity with amalgam, and when hard, drilling a good sized hole in the centre of the crown, through which the cotton wool could be removed and the tooth very much more readily treated, from the direct manner in which the canals could be reached.

As regards the second class, viz. abscesses without any fistulous opening, these were the most difficult and troublesome cases we have to deal with in practice, and very frequently end in our complete failure to arrest the disease.

There were several methods by which such teeth might be treated. 1st. By antiseptic dressings applied every two or three days, the administration of a brisk purgative and sulphate of quinine in three or four-grain doses thrice daily, or calcium sulphide in $\frac{1}{16}$ grain doses every two hours, either of which had a good effect in promoting the absorption of the inflammatory exudation. 2nd. Filling the tooth with cement or gutta percha, and by this means trying to produce

a fistulous opening. 3rd. Drilling a hole through the alveolus as near the position of the abscess as possible, by means of a drill or small trephine; keeping the opening patulous by means of cotton wool tents, or what he liked better, a piece of doubled-up silver suture wire, which should be allowed to remain till the canals of the tooth were thoroughly disinfected, and the pus and exudation drained away. He employed each and all of these methods according to the exigencies of the case, but one had to confess that our methods of treatment are not so accurate, but that we have numerous failures in this class of cases; the principal cause of such being our inability to get a free opening through the canals of the tooth into the abscess sac and sinus, artificial or otherwise.

A very prominent question at the present time among pathologists, and one which was of great interest to Dental Surgeons, was—"Does the presence of micro-organisms spread and produce or intensify inflammatory action?" That they were the origin of inflammation very few believe, but when they were present they were apt to infect the surrounding structures, and thus spread and intensify the inflammation. In the case of alveolar abscess, with a fistula and a carious open cavity, we could readily understand microzymes to be present in abundance, but one would be inclined to doubt their presence in abscesses connected with perfectly sound teeth, the pulps of which had been destroyed by a blow or fall, or in a tooth which had been filled for a number of years, the pulp having been unexposed, but which subsequently had become dead and produced abscess. He had recently examined the pulp of one such tooth which had caused abscess, and found it white and sodden, but without any putrid odour, and, so far as he could make out, there were no micro-organisms present. This subject, however, required patient and thorough investigation before we could tell definitely the effect which micro-organisms have in inflammatory lesions. He had prepared, and would show, several slides with pus taken from abscesses, acute and chronic, the first by aspiration from an unopened abscess, the second from a fistulous abscess, and being stained by the most approved method, they, in both cases, showed the presence of micrococci and bacteria in considerable numbers.

THE ANNUAL MEETING.

THE Annual Meeting of the Odonto-Chirurgical Society was held in the rooms, No. 30, Chambers Street, Edinburgh, on Tuesday, the 13th March. Dr. John Smith,

F.R.C.S. Edin., President of the Society, occupied the chair. Among those gentlemen present were the following:—Dr. Smith, Dr. Hogue, Dr. Walker, London; Dr. Williamson, Aberdeen; Walter Campbell, L.D.S. Edin., Dundee; Andrew Wilson, L.D.S. Edin.; W. B. Macleod, L.D.S. Edin.; Malcolm Macgregor, L.D.S. Edin.; Rees Price, L.D.S. Eng., Glasgow; J. S. Amoores, L.D.S. Eng., Edin.; Matthew Finlayson, L.D.S. Edin.; John Wells, L.D.S.I., Berwick; Austin Biggs, Glasgow; James Mackintosh, Edinburgh; George Sime, Dundee; James Shiach, Elgin; Joseph Harrison, L.D.S.I., Sheffield; Peter Crombie, L.D.S. Edin., Aberdeen; George H. Watson, L.D.S. Edin.; Alex. Cormack, L.D.S. Eng.; Charles Matthew, L.D.S. Edin., besides many visitors.

The minutes of the previous meeting were read and approved.

On a ballot, Mr. John Wood, L.D.S.I., Dumfries, and Mr. John S. Amoores, L.D.S. Eng., Edinburgh, were admitted members of the Society.

Mr. FINLAYSON, Treasurer of the Society, gave in his annual report. He stated that the income from town members amounted to £13 13s., and from country member to £27 6s., which, with interest on deposit receipt, &c., £4 3s. 1½d., amounted to £45 2s. 1½d. The expenditure, per cash book, showed £41 3s. 2d., leaving a balance in favour of Society of £3 18s. 11½d. Capital £93 18s. 11½d. The accounts had been audited by Mr. Wilson. Seven members were in arrear with their subscriptions. The reason for this, he believed, was that doubt existed on the part of some, as to their position on account of the date at which their subscriptions became due. He had of late, and he thought his successor in office ought also to consider, a subscription paid in January or February, with entry money, as properly belonging to the year to which the payment was made, and that the receipt should state that it was for the session 1883—84, or otherwise, as the case might be. A good deal of confusion had arisen in this way, but it could only happen once with any member. The income last year was larger, on account of the number of subscriptions that had fallen in arrear, and which had been paid up.

The CHAIRMAN thought the proposal of the Treasurer was a good one. It would be a pity to make a member pay for a very few meetings if he happened to enter early in the year. He supposed the Society had no objection to this proposal. (Applause).

The TREASURER also made a statement to show the advance the Society had been making. The Society started in 1868

with 16 members. There was a great influx during Mr. Campbell's presidency, when there were 44; and last year there were 57. There were at present 13 town members.

The membership at present was 6 honorary, 2 corresponding, and 58 ordinary members.

Mr. PRICE suggested that a list of members up to the present time should be printed and attached to the next 'Transactions,' and this was agreed to.

Mr. G. W. WATSON, Librarian and Curator, reported that since the beginning of the year there had been added to the museum a cystic tumour of large size attached to the roots of a lower molar, and they had just received from Mr. Stewart, Perth, a donation to the library of the first five volumes of the 'Dental Cosmos.'

On the motion of the CHAIRMAN, the secretary was instructed to convey to Mr. Stewart the thanks of the Society for his gift.

On the motion of Mr. MACKINTOSH, Edinburgh, the following were elected office-bearers for the ensuing year:

President.—Mr. Andrew Wilson, L.D.S. Edin.

Vice-Presidents.—Mr. W. Bowman Macleod, L.D.S. Edin., and Mr. Joseph Harrison, L.D.S.I., Sheffield.

Treasurer.—Mr. Malcolm Macgregor, L.D.S. Edin.

Secretary.—Mr. M. Finlayson, L.S.D. Edin.

Curator and Librarian.—Mr. G. W. Watson, L.D.S. Edin.

Council.—Dr. Smith, F.R.C.S. Edin.; Mr. J. Austin Biggs, Glasgow; Dr. W. Herbert Williamson, Aberdeen; Mr. John Moore Lipscombe, Kilmarnock, L.D.S. Eng.

Mr. W. B. MACLEOD, Edinburgh, proposed that they should elect to the honorary membership of the Society Norman W. Kingsley, of New York, as a mark of their appreciation of his services to the profession in its many branches, but more particularly for his original researches in Dental prosthetics.

Mr. AUSTIN BIGGS, Glasgow, seconded the motion, which was agreed to.

Mr. CAMPBELL, Dundee, proposed that Mr. Williamson, late of Aberdeen, should be also elected an honorary member. He had filled the president's chair for two years, and ever since the beginning of the Society he had taken a most active and leading part in furthering its prosperity. He thought they could not show their respect to him more than by electing him one of their honorary members. Mr. Williamson had now retired from practice.

Mr. ANDREW WILSON, Edinburgh, seconded the motion, which was adopted.

Mr. FINLAYSON thought it was their duty to award the

thanks of the Society to the gentlemen who had held office during the past year, and more particularly to the Secretary, for the very able way in which he had conducted the business of the Society, stating at the same time that he was induced to accept the secretaryship at the eleventh hour, and hoped that, in coming forward to fill such an arduous post in an emergency, he would meet with the indulgence of the Society, as it would be a difficult task to fill it as it had been filled by Mr. Macleod.

Mr. CAMPBELL, Dundee, seconded the motion, making special mention of the way in which Dr. Smith, as president, had furthered the interests of the Society.

The motion was cordially agreed to.

Dr. SMITH briefly returned thanks.

Mr. MACLEOD, in acknowledging the vote of thanks, said his services as secretary had really and truly been to him a labour of love. Whatever use they had been to the Society, they had also been of use to himself, by keeping him in work, and training him in business habits. He retired from it because he thought he could do more good to the profession by giving the whole of his energies to furthering the interests of the Dental school. If he only met with the like successful results and hearty co-operation which he had received while secretary to the Society, in following out his school work, he would have no reason to regret the labour he intending bestowing upon it.

Mr. W. B. MACLEOD then communicated some notes on "The Electric Light in Dental Surgery." There was no doubt, he said, that a clear, steady, and diffused light, capable of being located within the cavity of the mouth, would be a very great advantage to Dentists generally. To those whose misfortune it was to practise their profession in cities which were frequently visited by fogs, it would be a still greater boon. Attention had for some time past been attracted to electricity as a commercial source of light, and it might indeed be looked upon as one of their standard sources, although not yet quite ready to supplant its older rivals—gas and oil. In their specialty, attempts had been made to render it available, and with some success, as the two batteries of the lamps which he brought under their notice would show; but it yet remained for the further development of means to ensure a source of "supply of power" which should be available on a moment's notice, and be at the same time comparatively cheap, before we could hope that it would be adopted generally in the profession—the battery, as a source of power, being open to the objections of inconstancy and wastefulness, and, besides,

requiring careful and constant supervision. These faults were certainly considerably modified if, besides the light, the Dentist used the mallet and motor, and thus having the battery in more constant use, utilised the decomposition of material which constantly went on after the battery was charged. What we want, however, is an accumulator in which the power may be stored and drawn from whenever required, and from which none will escape when not in use; or a small dynamo which will generate it cheaply when required, or a general depot from which we could have a wire to turn it on when required, as we did our gas. These were still in the future, and those who wished to avail themselves of the electric light in Dentistry must, in the meantime, be content with the "D'Or" battery, or the bi-chromate battery, both of which he exhibited. He recommended the bi-chromate battery to those who used the mallet and motor. It was so arranged that, when not in use, the plates could be withdrawn from the solution, thus avoiding waste to a very great extent. One or more of the cells required to be charged about once a week, or at the very least once a fortnight. He then described the "D'Or" battery, and said it was a good battery, with strong power for its size, and of small resistance, but it went on constantly wasting after it was once charged. Both batteries, after continued use for a time, got weaker, and they must be allowed to rest. The bi-chromate battery was a cleanly one, and could be kept in the operating room without destruction to the instruments, or causing any annoyance by smell. It only required a little attention once a week or so, according as it was made use of. He was indebted to Mr. Nathaniel Stevenson, of London, for the battery, and to Dr. Walker for the careful conveyance of it from London to Edinburgh. Mr. Stevenson had sent him some notes regarding it, which he might as well read. "The lamps used were Swan's lamps, an inch long and a quarter of an inch in diameter. The carbon filament was about a quarter of an inch in length. One was mounted on a long tube, and covered by a double glass shade. The internal shade was hermetically sealed to the ivory socket which contained the light. The wires passing through the tube were connected with the battery in such a way as to allow the patient holding it to turn the current off and on at will. Another lamp was fitted in like manner to a larger vulcanite socket, to be used as a prop to keep the mouth open during operation, but in this instance the current was intended to be regulated by the operator. In both cases the lamp was stated to burn with impunity under water. The current was produced by

a four-celled bi-chromate battery, and was regulated by a reostat."

The battery was then in working order, and the lamp placed in the mouth of Mr. Biggs, who said the insertion of the lamp made him feel uneasy. It reminded him of an experiment made many years ago when he was assistant to Dr. Smith, in which a small apparatus had been devised for lighting up the mouth by electricity. In both cases the sensation was somewhat similar.

The CHAIRMAN said that he recollected the circumstance referred to by Mr. Biggs. The apparatus suggested at that time by himself was the result of what he had seen at the opening of the Aberdeen Institute by Prince Albert, about the year 1859. It was made by Mr. Hart, who was then a philosophical instrument maker in North College Street, and was exhibited at the Medico-Chirurgical Society, and tested there by the late Professor Miller and others. It was, however, much inferior to that now shown; in fact, a mere experiment.

Mr. MACLEOD said the light was sufficiently strong to render the teeth translucent, so that they could see to the centre of them, except in the case of very dense yellow teeth. He had heard it stated that it would not only do that, but enable a very sharp-eyed man to see exostosis on the root. It gave a good light by which to investigate the cavity of the mouth and the throat. In answer to Mr. Campbell (Dundee), he said the light never generated such a heat as to cause burning.

Mr. PRICE said he understood Mr Macleod to say the D'Or battery would only last ten days; but he was of opinion it would last three weeks. With regard to the waste, that did not matter very much. His battery only cost him a sovereign a year. He did not think the waste would amount to fifteen pence.

A vote of thanks was accorded Mr. Stevenson for the loan of his battery, lamps, and reostat.

The discussion then dropped.

Mr. MACLEOD then exhibited a model of an artificial obturator and nasal support, made by him in connection with his class at the Edinburgh Dental School. The case was sent, on the recommendation of Dr. Smith, from the Royal Infirmary by Dr. M'Laren of the Lock Hospital. The patient is a female, eighteen years of age. It is a case of congenital syphilis, and the destruction of tissue involved the whole of the hard palate, and the bones of the nasal cavity. The cicatrices were drawing the nose down flat with the face, and Dr. M'Laren was anxious that something should be done.

to raise the nose, or at least to counteract the contraction, and at the same time that something should be done to enable the patient to express herself intelligibly, as in her then condition she could not speak one word which could be understood. The treatment of the case being left to his own discretion, he took a great interest in it, and, after some scheming, had contrived the apparatus which he had now the pleasure of exhibiting, and which, he was happy to say, is serving the purposes for which it was constructed. It is made in two pieces:—1st. The obturator, carrying a few artificial teeth; 2nd. The nasal support and septum. The obturator is made of black vulcanite; the nasal support, which is a fac-simile of the lost parts of the nasal cavity, being also of black vulcanite; the septum of Dental alloy. The nasal support and septum is furnished with a flat base, with bevelled edges, which fits into a corresponding depression on the upper surface of the obturator, and is thus kept steady in its place. Being supported upon the obturator, it does not press upon any of the soft parts, and is as easily placed in position by the patient herself as an ordinary artificial denture would be. The model of the patient's face, embracing the cheeks, nose, and lips, the nasal cavity, and the upper jaw, in their relation to one another, was shown, with the obturator, &c. On request, Mr. Macleod explained how he obtained the impressions and made the piece. 1st, He took an impression of the upper jaw in plaster, and on the model obtained from this impression he formed the obturator carrying the artificial teeth, which was baked on a duplicate model. 2nd, The obturator being made and fitted, he filled the nasal cavity with carefully-prepared bees'-wax, and putting in the obturator, pressed the bees'-wax home through the nostrils, this being allowed to remain till the third stage of impression-taking was complete. 3rd, He took an impression in plaster of the cheeks, nose, and lips, bringing the plaster over the lips on to the edges of the artificial and natural teeth in the upper jaw. When set, this mask was removed, the obturator taken out, and the bees'-wax carefully pushed from the nasal cavity into the mouth. By placing the obturator on the original model (the front portion of the *standard* or *base* having been cut away, exposing the whole of the cleft, but leaving the model of jaw itself intact, and supported only by a pillar somewhat like a right angle


 (), the wax impression was easily placed in position upon the upper portion of the obturator, which projects through the cleft, and the mask was supported upon the

edges of the teeth and that portion of wax impression which had projected through the nose. Before placing the mask in position, the model of the nasal cavity was made in two pieces. The mask was then adjusted as before described, the facial portion of the model cast, and the result was a correct representation of the various parts in their exact relation to each other. In the model thus obtained he fashioned the nasal support, but finding upon trial that it and the obturator did not fit so accurately to one another as desired, he cut out the centre of the obturator, put the support in the cavity, placed the obturator in the mouth, and took an impression in plaster through the hole thus cut of their mutual relation. It was now easy to vulcanise a new centre in the obturator, which was correctly adapted to the base of the support, thus rendering the apparatus complete.

The patient was brought into the room, and the members were enabled to examine the cavity of the mouth by means of the electric light. They were also enabled to observe the effect which the obturator and nasal support had on the patient's speech.

The CHAIRMAN said the Society was very much indebted to Mr. Macleod for bringing this case before them. It was one of the most interesting and satisfactory cases of mechanico-surgical dentistry he had ever seen.

Mr. CAMPBELL said the improvement in the girl's speech with the obturator was most marked.

Mr. G. W. WATSON was afraid the patient would be liable to a recurrence of the disease from the irritation of the tissues by the obturator. He had a case of a similar character, where he made an obturator, and the poor man had been operated upon twice since from that cause.

Mr. MACLEOD called attention to the fact that unless the late movement in dentistry had taken place—if a school had not been established—it was very unlikely that such a case could have been taken in hand. It was one strong example of the progressive effects upon their profession of the establishment of their curriculum, and a school to carry out that curriculum. With regard to Mr. Watson's remarks, he questioned very much whether there would be a recurrence of the disease. It required pressure to cause a recurrence of destructive waste of tissue; he thought that in the case shown they would find no pressure. The soft parts rested upon the plate, not the plate upon the soft parts.

In answer to Dr. Williamson, Aberdeen, Mr. Watson said, in the case he referred to, the disease was lupus. He made up a nose and lip. The man could not speak nor take his food properly before that was done.

The CHAIRMAN said he remembered Mr. Watson's case. It was a very ingenious and clever contrivance. The nose was wanting altogether. But it was a somewhat different case from this. Owing to the greater destruction of the tissue in that case, there was greater liability to recurrence of the disease. He thought Mr. Macleod's case was more likely to be successful from this point of view.

Dr. WALKER (London) said he had seen similar cases. One of the patients had worn an obturator for six and a half years. It was a very successful case, though it had certainly to be withdrawn occasionally to give rest to the parts. The nasal support which had been handed round that morning was certainly unique in design, and beautifully finished.

Dr. WILLIAMSON, Aberdeen, next exhibited a model of a case in which the bicuspid on the right side of the upper jaw of the patient, aged nineteen, were both absent, and both temporary canines were present. In the lower jaw both lateral incisors were absent, and the permanent canines touched the central incisors. The second temporary molars were present on a level with the gum between the first permanent molar and the first bicuspid.

Mr. MACLEOD then exhibited the upper and lower models of the mouths of two young ladies—sisters. He mentioned that he should have had a third model, a model of the upper and under jaw of a brother of the ladies, but at the last moment he would not submit himself to the operation of having his mouth modelled. The peculiarity here was that the three mouths had not a complete set of teeth amongst them. They had only twenty-seven teeth in all. The elder of the two had only eight permanent teeth, with some temporary teeth remaining. She was twenty-seven years of age. She had had one extracted, but he had counted it among the permanent ones. The other young lady was twenty-two years of age. She had twelve permanent teeth and a greater number of temporary teeth remaining. The brother was seventeen years of age, and he had only seven permanent teeth, and a considerable number of temporary teeth still existing. The two grandmothers of these patients were also deficient in the number of their teeth. The father and mother and a sister twenty-five years of age were normal. The father and mother were cousins, which accounted for the fact in one sense.

Mr. CAMPBELL asked if the young ladies were of average intelligence?

Mr. MACLEOD said they had more than average intelligence. They were rather intellectually inclined. Their

parents were educated people, and they were rather above the middle class of society.

Mr. BIGGS asked about their physical development.

Mr. MACLEOD said their physical development was good. Their features were well formed, and they were good looking. They had a certain piquant expression, but, apart from that, there was nothing remarkable to an ordinary observer.

Mr. STIRLING, Ayr, exhibited an articulator, which he stated he had brought under the notice of the members on a previous occasion. Since then he had introduced brass plates, which prevented the expansion of the plaster, and gave perfect accuracy in working.

Mr. FINLAYSON showed upper and lower models of the teeth of the Amazon Queen who was recently exhibited in Edinburgh, and a photograph of the lady. She was of the enormous height of eight feet two inches, and the arch of the mouth very large. The teeth were small, so that it was a practical solution of the difficulty of applying small teeth to large mouths. She had only lost one tooth—the first lower permanent molar on the right side. Her wisdom teeth were all present. Her age was stated to be about eighteen years, but he would suppose her to be several years older than that.

The models were presented to the museum.

Mr. HARRISON, Sheffield, then showed model of an abnormally large lower lateral incisor.

The CHAIRMAN then delivered his valedictory address. He said: Gentlemen,—It is customary for the President of your Society, on terminating his period of office, to say a few words previous to his formal resignation of the chair. The duties of that chair I have had the honour of performing for the usual period of two years, and I can now look back upon them as having been to me of a most congenial and peculiarly pleasing nature; so much so, that I now relinquish them with considerable feelings of regret. Not that by any means I grudge my esteemed successor the enjoyment of discharging them, which I know he will do well; but on the ground that, having attained the summit of ambition aspired to by any member of such a society, my descent now commences once more into the lower level of the plain beneath. Before quitting my present altitude, however, two further duties remain to be fulfilled. The first is to thank you for the honour of having been elected your President. This I do most willingly and most heartily. The second is shortly to recapitulate the important business upon which I can congratulate the Society as having transpired during my tenure of office.

Time will not permit me to do more than give a brief summary or enumeration of the mass of material additions to our knowledge and experience of Dental Surgery in the communications brought before us since March, 1881. Suffice it to say that all of them have been important, interesting, and acceptable in every way, and have comprehended subjects in every department of our profession. Allow me merely to mention what the principal papers have been which were read at the meetings during the last two years.

At the annual meeting of March, 1881, when I had the honour of the presidency being conferred upon me, three interesting and important topics came before the Society in the discussion upon Mr. Watson's paper on "Secondary Hard Formations in Pulp Cavities," in the communication by Mr. Wilson "On the Sectorial Teeth of Existing Carnivora," and in that of Mr. Walter Whitehouse, "On the Endowment of Research in Dentistry." At the November meeting of that year I had myself the privilege and pleasure of delivering a few remarks "On Scientific Inquiry," as my inaugural address; and a short paper entitled "Notes on Two Cases in Practice," by Mr. Browlie, of Glasgow, was read by the Secretary, in which some useful suggestions were made regarding the use of oxychlorides in Dentistry; at the meeting of December 8th, a paper "On Vulcanite Dentures" was read by Mr. Austin Biggs, a communication of a valuable and practical nature, inasmuch as it was the outcome of actual experience. The Society met on January 12th, 1882, when Mr. Biggs's paper was discussed, and some interesting matters of various kinds brought before the members. At the meeting of January 9th, a paper somewhat out of the common, was communicated by Mr. Laws, of Weymouth, entitled "Surgery Talk, or Conversations between Operator and Patient." March, again, brought about the annual meeting, when a valuable and erudite lecture was given by Principal Williams, of the Edinburgh New Veterinary College, on "Dentition in the Horse and other Animals."

At the same meeting, a long and full discussion took place upon various matters connected with the Dental curriculum and the Dental examination; and which, I think I am justified in saying, tended to some good results in the subsequent action of the Medical Council. Professor Turner was one of those taking a prominent part in the deliberations of the Medical Council on this matter; and I can speak from the conversations he had with me on more than one occasion, of the sincere and friendly interest he took in the various questions at issue during that discussion. At the meeting

of November 9th, a most important subject was brought before the Society by Mr. Gaddes, in his paper on "Limitations of Dental Surgery." A prolonged and careful discussion followed the reading of this communication, which involved questions of the most important aspect in reference to the Dental profession, and which will sooner or later require to be more definitely adjusted in one way or another. At the meeting of December 14th, Mr. Wilson read an exhaustive and suggestive paper on "The Classification of the Teeth in Mammalia;" and Mr. Whitehouse another upon the subject of "Pivot Teeth." The meeting of January, 1883, was a conversational one, when the subject of gold fillings was introduced by Mr. Campbell, of Dundee, and an interesting, instructive, and highly successful demonstration of gold plugging with the electric mallet was given by Mr. Andrews, L.D.S. Eng., assistant to Mr. Campbell. Mr. Watson's communication upon the "Pathology and Treatment of Alveolar Abscess," delivered at the February meeting, brought the papers up to the present date; and, without speaking of the very large number of supplementary subjects submitted by members on each of these occasions, in the shape of interesting cases, specimens, and demonstrations, I feel that I may safely congratulate the Odonto-Chirurgical Society on the work done during my very pleasant term of office, as in every way creditable to any association of the kind. Such a list shows unmistakably the will to work, the materials to work upon, and the ability to do justice to such work, possessed by our Society. It is the promulgation of such knowledge, and its promulgation in such a way, that constitutes the essential feature of such associations. Fresh information is thus imparted, and new ideas suggested; and if we must guard against being carried away by notions of our own superiority and advancement in comparison with our forefathers—if we must remember that we are always apt to overlook the fact that when

"We think our fathers fools, so wise we grow;
Our wiser sons, no doubt, will think us so;—"

still we must not forget, on the other hand, that

"Thoughts shut up want air,
And spoil like bales unopened to the sun."

And now, gentlemen, I will detain you no longer, except to say that, in handing over the presidency of the Odonto-Chirurgical Society to one of the most scientific practitioners of our profession—Mr. Andrew Wilson—I do so with the full confidence that the success of the Society will be advanced under his leadership as ably and satisfactorily as its most cordial well-wisher could desire.

The thanks of the meeting having been given to Dr. Smith for presiding,

Mr. ANDREW WILSON, the newly-elected President, then took the chair, and having briefly thanked the members for the honour they had done him in placing him in that position, the proceedings terminated.

THE ANNUAL DINNER.

THE Annual Dinner took place in the evening at the Balmoral Hotel. The chair was occupied by Mr. W. Bowman Macleod, L.D.S., Edin.; Mr. Joseph Harrison, L.D.S.I., Sheffield, acted as croupier, and among those present were Professor Balfour, Edinburgh, President of the Royal College of Physicians; Dr. Joseph Walker, London, President of the Odontological Society; Professor Turner, Edinburgh, President of the Royal College of Surgeons; Professor Crum Brown, Edinburgh; Dr. John Smith, Edinburgh; Dr. Reid, Edinburgh; Dr. Littlejohn, Edinburgh; Dr. Williamson, Aberdeen; Dr. Wilson, Edinburgh; &c.

The CHAIRMAN, after dinner, proposed the toasts of "The Queen," "The Prince and Princess of Wales, and other members of the Royal Family," and "The Army, Navy and Reserve Forces."

Professor TURNER replied for the latter toast, and afterwards proposed "The Licentiates in Dental Surgery." In doing so he said that the Dentists' Act of 1878, inaugurated a new era in the profession of Dentistry. Amongst other benefits it was the means of inducing the Colleges of Surgeons both in Scotland and Ireland, to enter seriously into the task of introducing arrangements for educational examinations, which had contributed greatly to raise the standard of the Dental profession. From all that he knew of what had been done in Edinburgh he believed the examinations had been conducted there with great wisdom and with a desire to select from the candidates those who were worthy of obtaining the title of Licentiate of Dental Surgery; and he felt sure that those gentlemen who had gone out with the title of Licentiate of Dental Surgery had proved themselves worthy of the distinction. He coupled with the toast the name of Mr. Campbell, Dundee, a Licentiate of the Royal College of Surgeons, England, whose merits as a practitioner were recognised by the profession as well as by the inhabitants of the important town in which he lived.

Mr. CAMPBELL, in replying, thanked Professor Turner for the way in which he had spoken of Dental practitioners, and said he was sure that they would all endeavour to acquit

themselves in their professional duties so as to command the esteem of the medical world in general. He had the curiosity on the previous night to look over a medical directory for 1872, and then to compare it with one for 1882, in order to see the difference made in the last decade so far as licentiates in Dental Surgery were concerned, and he was astonished to find that in the Directory for 1872 there were six and a quarter pages given to Licentiates in Dental Surgery, and that in 1882 there were twenty-seven pages devoted to them. There had been peculiar circumstances which had led to this rapid increase, and they were not at all likely to have the same increase during the next decade; but they were now certainly an important factor in the medical profession, and he was sure they were glad to hear Professor Turner recognise them as such.

Dr. LITTLEJOHN proposed "The Dental Associations of Great Britain," and in doing so congratulated the members on having agitated and combined, and on having combined in a proper way by the formation of an association for the discussion of subjects pertinent to their own profession. Nothing pleased him better than to find the British Dental Association now a powerful body, and having a first-rate organ for the discussion of subjects that came under its notice.

Dr. JOSEPH WALKER, whose name had been coupled with the toast, replied. Speaking of the British Dental Association, he said that this Association which formerly numbered seventy, had now 700 members—700 Dentists joined together, amalgamated for the benefit of the whole profession. They intended to do their very best in order to get representation in the Medical Council of Great Britain. They were now entirely in the hands of the medical profession, and the central body had the power of governing their education, and influencing their Dental examinations from one end of the country to the other; why then should they not grant two representatives to really represent Dental interests in this central body? From what he had heard non-officially he believed that the Medical Bill that was read in the House of Lords last Thursday would be found to be a thoroughly satisfactory Bill.

Dr. W. H. WILLIAMSON, in proposing the toast of "The Medical Authorities," said he fully admitted the justice of the demand for the representation of the Dental profession in a body which was to have to do with the regulation of its examinations.

Dr. BALFOUR, in replying, said he rejoiced in the prosperity of this society, and should be most happy to assist them in obtaining a representation in the Medical Council.

Mr. HARRISON next proposed "The Dental Licensing Boards."

Dr. SMITH replied, and spoke of the system of examination in Scotland as careful and rigid, and said he had no hesitation in affirming that the question which presented itself to the students in their daily work was not how little knowledge would suffice to enable them to get a license, but how much knowledge it was practicable to obtain.

Mr. CROMBIE, in the absence of Dr. Heron Watson, proposed "The Edinburgh Dental Hospital and School," and in doing so remarked that those who had the management of that institution occupied a most important position in training those who had the future honour of Dentistry to maintain. All would agree with him that the gentleman who was at the head of their training college was worthy of that position. He had shown in the short time that he had occupied that prominent position that he was worthy of all confidence, both from the way in which he had discharged the duties devolving on him, and by proving that he had the ability to infuse energy into those with whom he had to deal.

The CHAIRMAN, in responding, said that his duties as Dean were extremely light, and that his efforts would be of little avail if he were not enthusiastically supported by a good and competent staff of Dental Surgeons and Dental teachers. Since the institution was started the staff had made it their endeavour to make the teaching of the students as perfect as they possibly could. They had perhaps not the experience of other schools, which age and time gave; but he was certain that they did not come second to them in their desire to give the students the benefit of their time and abilities. The school was doing a good work for the profession and for the public, and he trusted it would always receive that hearty support from the medical and surgical profession which it had hitherto received.

Other toasts were proposed and heartily received, these comprising "Visitors from a distance," proposed by Mr. A. Wilson, and responded for by Mr. J. Stirling, "The Chairman," by Professor Crum Brown, "The Croupier," by Professor Turner, "Absent Friends," by the Chairman, and "Dr. Reid," Edinburgh, by Dr. Smith. Several songs were sung by members of the company in the course of the evening.

IN a recent list of the successful candidates for the degree of Doctor of Dental Surgery of the Pennsylvania College of Dental Surgery, we are pleased to see the name of John Sugden Crapper, of Hanley, Staffordshire.

Literary Notices and Selections.

THE OPINION OF A "DENTAL SURGEON."

To the Editor of the 'Lancet.'

SIR,—I noticed an annotation in last week's 'Lancet' under the above heading *à propos* Mr. Justice Field's estimate of the value of the evidence of a third-class emigrant calling himself a "Dental Surgeon," who presumed to proffer himself as a medical witness in an action brought by a co-emigrant against the owners of the ship in which they had travelled. I quite agree with your remarks, as with those of the judge, but though your meaning is plain to your professional readers there are other readers of your journal who might think that you classed those qualified surgeons who are practising Dental Surgery in a similar category with wholly unqualified dentists who call themselves Dental "surgeon" and "surgeon" dentist. We are indebted to you for your generous aid afforded to the Association of Surgeons Practising Dental Surgery in their endeavour to arrest that disastrous legislation which has enabled almost wholly uneducated men to register themselves as "Dental Surgeons," thus placing themselves nominally on a footing with the best educated in the speciality, whether specially or doubly qualified, as every person really entitled to call himself a Dental Surgeon ought to be. I cannot but think that even the promoters of the Dental Registration Bill must blush in passing through the streets when they see the Dental shops—literally *shops*—which they have called into existence, whose owners blazon their calling as "registered Surgeon and dentist" (*sic*) above their show fronts, when they think how easily they might have purged the profession of such a pollution to its fair fame once and for ever, instead of admitting all who chose to term themselves dentists, as registered practitioners into their fold; whilst I am convinced that many licentiates of Dental Surgery cannot be less disgusted with the assumption of equality by such men with them, than we who are surgeons are by the unlicensed use of the title "Surgeon" by persons whose practices are an opprobrium to any branch of the healing art, however humble it may be.

It is passing strange that those who dissuade the younger members of the profession from becoming *bonâ-fide* surgeons should be so jealous of assuming the title of Dental "Surgeon" and "Surgeon" Dentist, whilst we who are medically qualified are quite content with the noble title of "Surgeon," Licentiates of Dental Surgery though we may

be also. But I am not alluding to those who hold the Dental licence of the College of Surgeons, though I would that they would all take a medical qualification also; but to the horde of utterly unqualified dentists who were most disgracefully permitted to be registered by the promoters of the Dental Bill, and now insult every qualified practitioner by the adoption of the designation surgeon, a practice you so justly reprobate.

I am, Sir, your obedient servant,
S. HAMILTON CARTWRIGHT.

To the Editor of the 'Lancet.'

SIR,—I cannot allow the letter of Mr. Hamilton Cartwright in the 'Lancet' of to-day to pass without some notice. To use his words, "there are other readers of your journal who might think you classed this qualified surgeon who is practising Dental surgery" with other qualified surgeons who are practising the same speciality—Dentists who, in addition to their mere surgical or Dental diplomas, are either F.R.S., F.R.C.S., M.D., L.R.C.P., or M.A.; thus, by virtue of the simple M.R.C.S. obtained by him in 1867, "placing himself nominally on a footing with the best educated to the profession."

With regard to the Association of Dental "Surgeons," your readers may like to know that they have held no meeting at their rooms for over six months; that for the present they content themselves with dining together once a year, paying an annual sum for their brass plate to remain on the Medical Society's door.

As to the Dentists' Act being a "monstrous" one, the replies of the president of the above Association, as its mouth-piece in August, 1881, before the Commission to inquire into the Medical Act, show that ultimately the profession will be raised by it.

Questioned by Mr. Simon, the President of the Association thus replied: "6434 (Mr. Simon) 'And yet you think the Act has been of advantage, and is of advantage to the profession of Dentistry?' 'I think it will be hereafter. At the present moment I can hardly say, having regard to the mixed people that are registered, that the profession is at present raised by it. I believe that it will undoubtedly be ultimately raised by it as soon as those men of whom I speak have in the course of time died out.' 6435. 'You are of course familiar with the fact that in all analogous legislation (for instance, on the passing of the Apothecaries Act in 1815), whenever a first register has had to be made, persons already *bonâ fide* in the position for which provision has had to be

made have been recognised as being entitled to registration? 'I quite admit the whole difficulty.' 6436. 'So that, in fact, unless that had been done, a first register could not have come into existence?' 'No, but I think it might have been a little more exclusive.'"

It is undeniable that there are undesirable "registered" Dentists, but I deny that the "Dental shops" were called into existence by the Dentists' Act, as they existed before, and would have continued to exist had this Act not been passed, which provides for the compulsory education and registration of all Dentists or Dental surgeons after 1878; so that in future educated men will not so disgrace themselves.

In the annotation on page 779 of your journal reference is made to Dentist-druggists keeping "doctors' shops" and prescribing their own drugs: the mere name of Dental surgeon has no influence, for poor people have always gone, and will always go, to the "chemist" to be doctored, unless some change is made in the Medical Act itself.

Now, as to the *right* of the Dentist to use the term "surgeon" in conjunction with "Dentist" or "Dental," it has been established, first by immemorial custom, then by law (by the judgment of Lord Chief Justice Cockburn and Mr. Justice Crompton in the case of *Ladd v. Gould*, Court of Queen's Bench, 1860), and the Dentists' Act did not take it away; and the commissioners referred to above in the Report, Section VI, Article 63, said—"The Association of Dental Surgeons practising Dental surgery appeared before us by their president, asking that qualified Dentists not on the Medical Register should be prevented from styling themselves 'surgeon Dentists.' *We do not see our way to make such recommendation.*" It is not generally realised that the curriculum for the licence in Dental surgery is three-fifths medical and surgical and two-fifths specially Dental. This fact alone would justify the use of the term Dental "surgeon," did it need justification.

I am, Sir, your obedient servant,

S. J. HUTCHINSON.

To the Editor of the 'Lancet.'

SIR,—Mr. Hamilton Cartwright's remarks under this heading in the 'Lancet' of to-day are based upon an error, an error inexcusable in one who sets himself up as an instructor in Dental politics; for it has been exposed over and over again in your columns, and must be known to everyone duly acquainted with the Dentists' Act. Of the actual provisions of this Act, of which he confidently speaks, and which he tries to discredit, Mr. Cartwright shows him-

self ignorant. The Act did not, as he alleges, confer upon the inferior practitioners, of whom he complains, the right to assume the title "surgeon," or "surgeon Dentist." These men have no more right now to that title, or to any other medical title they may choose to assume, than they had before the passing of the Act. All that the Act did in this regard was to compel every individual in practice as a Dentist to register; and it provided that in future no one should be allowed to enter the profession of Dentistry unless he possessed at least a recognised diploma in Dental Surgery.

I am, Sir, your obedient servant,

HENRY SEWILL.

To the Editor of the 'Lancet.'

SIR,—When a "professor" presumes to disparage a witness in a civil trial, and implies an illegal assumption of the title "Dental Surgeon," it is expected that he has at least ascertained all the facts of the case. It was, of course, beneath the dignity of a "professor" to examine the Dental Register, or an authorised list of licentiates in Dental Surgery, to learn, if possible, the name and qualification of the said witness. It was quite enough for this learned dignitary that the witness travelled third-class. To a professional "saloon" passenger it would never occur that there might be exceptional circumstances deciding even an L.D.S. to travel third-class, not as an emigrant, but as a passenger. Allow me, as the witness referred to, to state that I deposed I was a "Dental Surgeon" simply because I held the diploma of Licentiate in Dental Surgery, Eng. Had my claim to the title "Dental Surgeon" been questioned, I should have stated the ground of my claim. But I must flatly contradict the scornful assertion of Mr. Cartwright, that "I presumed to offer myself as a medical witness." I was subpoenaed to give evidence in support of a protest signed within four hours by 111 male steerage and third-class passengers on board the "Chimborazo." Mr. Justice Field narrowed the complaint to the question "Was the meat served to the third-class passengers putrid, and did the supply of rice and sugar fail?" In the course of my reply to this enquiry I referred to the fact that on one occasion nearly all the said passengers suffered an acute attack of diarrhoea, caused, I believed, by tainted meat. Mr. Justice Field ruled that this circumstance lay outside the inquiry in hand, and counsel for the defendant chaffingly observed, "A Dental Surgeon is not a judge of that." That Judge Field refused my evidence on the ground that I was a Dental Surgeon is an insinuation I had not heard or met with until I read Mr.

Cartwright's letter in your issue of the 10th. Permit me to regret the spirit of that letter, and to add that I was, and am, as much disgusted with the admission of an indiscriminate host to the Dental Register, as the "professor" himself; and also, that I am equally disgusted with the pharisaic pride of those who assume pre-eminence in the domain of Dental surgery, solely on the ground that they are "medically qualified," and call themselves, "We who are surgeons!"

I am, Sir, your obedient servant,
EDWIN COX, L.D.S., Eng.

[SOME more letters on the same subject will appear in our next issue.—ED.]

APPOINTMENT.

MR. J. JAMES BAILEY, L.D.S. Edin., has been appointed Honorary Dental Surgeon to the Denbighshire Infirmary.

At a general meeting of the medical staff, committee, and trustees of the Stockport Infirmary, held on the 28th inst., Mr. SIDNEY WORMALD, L.D.S., was unanimously elected Hon. Dental Surgeon to that institution.

WE are informed that the Annual Meeting of the Midland Counties Branch of the British Dental Association will be held on April 23rd at the Raven Hotel, Shrewsbury.

ASHENHURST FUND.

£ s. d.

Per Dental Manufacturing Co.—

Mr. F. Canton 0 10 6

Further subscriptions will be received by Messrs. C. Ash and Sons, the Dental Manufacturing Company, Mr. Rutterford, Messrs. W. and J. Jamieson, and the Editor of this Journal.

Communications have been received from "Chirurgeon" (Dublin), Dr. D. Taylor (Glasgow), Messrs. A. B. Moseley (Leeds), G. Rutterford (London), Ash & Sons (London), Dr. Redmond (Brighton), J. J. Bailey (Rhyl), A. B. Verrier (Weymouth), G. M. P. Murray (Dublin), M. Miller (Berlin), M. Finlayson (Edinburgh).

BOOKS AND PAPERS RECEIVED.

'L'Odontologia.' 'El Progreso Dental.' 'The Dental News.' 'Pharmaceutical Journal.' 'Glasgow Medical Journal.' 'Ohio State Journal.' 'Die Zahntechnische Repria.' 'American Journal of Dental Science.' 'Le Progres Dentaire.' 'Cosmos.' 'New England Journal of Dentistry.' 'Exeter and Plymouth Gazette.' 'Lancet.' 'British Medical Journal.' 'Medical Times and Gazette.' 'Dental Record.' 'Chemist and Druggist.' 'Journal of the British Dental Association.' 'Henry Sewell's Dental Anatomy and Surgery,' 2nd ed. 'Transactions of Odontological Society of Great Britain.' 'Transactions of the Odonto-Chirurgical Society.' 'Gazette d'Hôpitaux.' 'L'Art Dentaire.'

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VOL. XXVI.

‘CYSTIC TUMOURS OF THE JAWS, AND THE ETIOLOGY OF TUMOURS.*

By F. S. EVE, F.R.C.S.,

ERASMUS WILSON LECTURER AND PATHOLOGICAL CURATOR OF THE MUSEUM OF THE COLLEGE, AND SURGICAL REGISTRAR TO ST. BARTHOLOMEW'S HOSPITAL.

(Continued from p. 320.)

LECTURE II.—ON SOME POINTS IN THE ETIOLOGY, GENERAL CHARACTERS, AND RELATIONS OF TUMOURS (*continued*).

A distinct relation can be shown to exist between the physiological and nutritive conditions of the different organs at certain periods, and their liability to tumour formations and even with the variety of tumour occurring at each particular period.

In investigating the pathogeny of tumours, each organ must therefore be taken as a separate unit, and considered in relation to its own life-history, as well as with the nutritive condition of the body generally, as indicated by age. For it is superfluous to remark, that the period of most active development and of greatest functional activity, as well as of commencing atrophy and degeneration, varies according to the purpose which each organ or tissue serves in the economy. This is especially exemplified at the period of puberty, when an immense acceleration is given to the development of the genital and allied organs; and to the skin, as shown by the growth of hair at various parts of the body. With this developmental activity, the appearance of certain tumours is coincident.

The dermoid cysts of the skin, Lücke† observes, nearly always first excite attention by their rapid increase at the period of puberty, although their rudiments are probably

* Lecture delivered at the Royal College of Surgeons of England.

† Pitha and Billroth's 'Handbuch,' Band ii, Abth. 1, p. 127.

formed during embryonic life, by an involution of the epiblast. Multiple warts on the skin sometimes, according to the same author, appear in women at puberty.

The adenomata of the breast are concurrent in their appearance with the accelerated development and awakening of functional activity in that organ, being almost invariably observed between puberty and the age of thirty years. They often show themselves after the functional activity of the generative organs has been stimulated by marriage, or during the first pregnancy.* According to Thomas,† cystic adenoma of the ovary shows itself during the period of the most vigorous activity in the sexual organs; and, from the statistics of Chereau and Lee, it is shown to be most common between the ages of seventeen and eighteen and forty. The onset of symptoms of this disease at a later period than the appearance of adenoma of the breast is probably in a great measure explained by the situation of the affected organs rendering the detection of the disease at an earlier period most improbable. Myo-fibromata of the uterus, according to Leopold,‡ never have been seen before puberty; while, on the other hand, Bayle estimated that, of all women dying beyond thirty-five years of age 20 per cent. were thus affected.§

These facts, I think, distinctly indicate that the appearance of the highly organised or innocent tumours is, as a rule, coincident with the development and greatest functional activity in these organs. In fatty tumours, it might be thought are an exception to this rule, because they most often are observed in middle age. But their origin may be referred with much probability to an earlier period of life, for Cohnheim has found small fatty tumours many times in fetuses. They, therefore, may remain unnoticed until growth is brought about in association with the accumulation of adipose tissue throughout the body occurring chiefly in middle age.

Turning to the bones, the period of active growth of which is entirely different from the organs just considered, we find that the innocent tumours appear, as a general rule, at an early age. The multiple enchondromata are occasionally congenital. Both these and the multiple exostoses are generally met with in early life, and are said invariably to occur before puberty.

The sarcomata of bones are, on the contrary, met with at a

* Lucke, *op. cit.*, p. 281.

† Thomas, 'Diseases of Women,' p. 673.

‡ *Op. cit.*

§ Thomas, *op. cit.*, p. 507.

later period. In a table of sixty-three cases of central tumours of bones, collected by Mr. Butlin,* only two occurred before the age of sixteen, and one of these was in a child aged five years. Of the sixty-three cases, forty, that is, over three fifths, occurred between the ages of sixteen and forty years.

In the table of fifty-six cases of subperiosteal tumours, there was a gradually increasing frequency from sixteen years upwards. Of the fifty-six cases, forty-three, or nearly four fifths, occurred between the ages of sixteen and forty, inclusive.

Of the total number of 119 cases, seven tenths occurred between the ages of sixteen and forty years. It must be remembered in connection with these figures that the union of the epiphyses to the diaphyses, in the long bones, commences at fifteen or sixteen years of age, and ceases at twenty-five.

From a further examination of these tables it is seen that, as regards the central tumours, not only those bones of which the sum† of growth is greatest are most frequently affected with sarcoma; but also that the parts of bones, in which growth last ceases, are, to a remarkable degree, liable to the disease. This is observed in the lower epiphysis of the femur, and upper epiphyses of the tibia and humerus. Of seventeen central tumours of the femur, ten were situated in the lower epiphysis; of thirteen in the tibia, eleven originated in the upper epiphysis; and of eight affecting the humerus, all but one were in the upper epiphysis.

These facts may, perhaps, be taken to indicate that the longer continuation of growth in these parts, after the cessation of the period of most active growth in the skeleton generally, renders them much more liable to sarcoma, and possibly connects the manifestation of the tendency to tumour formation with a decline of nutritive activity in the part, such as is observed in the breast during the cancerous age. And, further, the coincidence previously pointed out in the period when sarcomata of bones begin to appear in large numbers, and in that of the union of the epiphyses may show also that the imperfect nature of the tissue of the sarcomata depends in part on the period of their occurrence, viz. during the decline in the activity, and after the cessation of growth in the bones.

But how are we to explain the occurrence of cancer at a much later period than sarcoma, since the conditions favorable to the development of both depend on a diminished

* H. T. Butlin, 'Sarcoma and Carcinoma,' p. 110, 1882.

† See Table of C. Länger, 'Deutsche Zeitsch. für Chir.,' Band x.

formative and nutritive activity in the affected part? An answer is found when the difference in the function of the two structures is borne in mind. After the cessation of growth, it may be supposed that the nutritive power of the connective tissues is, under ordinary circumstances, only sufficient for their maintenance, and of a much lower degree than in the epithelial structures. These are constantly thrown off, or used up in secretion, when they are replaced by a constant succession of newly-formed cells. This is also shown by the earlier atrophy of the connective tissue in advancing age, upon which Thiersch strongly insists.

The generative organs in the female are the first epithelial structures to become atrophied, for the obvious reason that they are no longer of utility after the period of child-bearing. And it is in these organs that we find cancer first manifesting itself. Numerous statistics show that cancer of the breast is by far most common between the ages of forty and fifty. In two tables given by Sir J. Paget,* the far larger proportion of cases was observed between forty, or forty-five, and fifty years, when they decreased in frequency. The more recent statistics of von Winiwarer† and Oldekop,‡ refer the maximum of cases to a slightly earlier age. The former computes the average age at which cancer of the breast occurs as 45·3 years. Of 108 cases of cancer of a closely allied organ, the uterus treated by Scanzoni,§ a greatly prepondering maximum was obtained between forty and forty-five years; the disease, like scirrhus cancer of the breast, being very rare before thirty years. If, however, we take a structure, such as the epithelium of the tongue, mouth, and œsophagus, which may be supposed, on the grounds already given, to maintain its nutritive activity longer than that of the breast or uterus, we find that cancer is most common in the decades between fifty and seventy. Of 70 cases of cancer of the tongue collected by Mr. Butlin,|| only 11 occurred before the age of fifty, and of 57 cases of cancer of the œsophagus, only 8 before fifty. Of 31 cases of cancer of the kidney collected by Walshe, the maximum number occurred after the age of fifty. The facts just stated are strongly supported by the statistical table of von Winiwarer, comparing the periods of greatest frequency of cancers in some different localities. The breast stands first, and is followed by cancer of the face, cancer of the mucous

* Op. cit., p. 635.

† 'Ueber die Statistik der Carcinome.

‡ Langenbeck's 'Archiv,' Band xxiv, s. 691.

§ Thomas, op. cit., p. 558.

|| Op. cit., p. 158.

membrane of the mouth and œsophagus being last by many years.*

It has long ago been pointed out that cancer is essentially a disease of degeneracy. Perhaps a nearer approach to truth is made in very broadly stating that, in the majority of cases, the origin of the innocent tumours corresponds to the periods of more active development, or, in some instances, of greatest functional activity in the particular organs; while the formation of the malignant tumours tends to occur during the decline of developmental activity (in the sarcomata) or subsequently to the completion of development (in the cancers), and extends throughout succeeding years. With the advance of life, the frequency of sarcoma decreases after the fortieth year, but the tendency to cancer increases until the sixth decennium, when it also diminishes.

It is needless to remark that exceptions to this broad statement are met with; and especially in a few tumours, either congenital, or occurring in childhood. They are nearly always sarcomata, the eye, kidney, and testicle being affected most commonly, and rarely the bones. The early occurrence of these tumours may, perhaps, be referred, in some instances, to a tendency observable in hereditary variations to appear at an earlier age in the offspring than in the parent; and, in others, to some peculiarity in the formation and development of the part.

We pass on now to consider one of the many debatable points with regard to tumours, and especially cancer, viz. heredity. The facts range themselves in two classes; 1, those derived from statistics; and 2, those observed in individual cases. The statistics at hand solely refer to cancer.

Probably the most reliable statistics of the heredity of cancer are those obtained by Mr. W. Marrant Baker from Sir James Paget's note-books,† which included hospital and private patients, in the proportion of about two fifths hospital to three fifths private. In 322 cancerous patients there were 78, or nearly one fourth, who were aware of cancer in other members of their families.‡ The term cancerous is here used in the old sense, to signify any malignant tumour.

Lebert, from 102 complete observations, computed the

* Op. cit., p. 295.

† 'Medico-Chirurgical Transactions,' vol. xlv, p. 389.

‡ Von Winiwarter's statistics, as regards the influence of heredity, are open to the objection that the cases were drawn entirely from hospital patients, from whom an accurate and complete family history cannot be expected. Thus, in Mr. Baker's tables the percentage of cases of cancerous inheritance was 37·4 amongst the private cases, against 17·9 among hospital patients.

number of cases of cancer in which a hereditary history can be obtained as one in seven; Sir J. Paget places it as high as one in three.

Mr. Harrison Cripps, in an ingenious article* seeks to prove that cancer is not hereditary. If cancer be hereditary, then the percentage of deaths from cancer in the parents of cancerous persons should be greater than among the population generally. Mr. Cripps, therefore, compares the deathrate from cancer in the parents of cancerous patients included in Mr. Baker's table, with the deathrate of adults from cancer in the United Kingdom. The comparison shows that there is only a slight difference in the death-rate in the two cases; and Mr. Cripps drew the natural conclusion that cancer is not hereditary; or, as he puts it, "that cancer in the parent in no way increases the liability of the offspring to suffer from the same disease." This result is so completely at variance with facts derived from individual cases, that I think there must be some sources of error, among which the following may be pointed out. In the first place, the Registrar-General's returns cannot be considered the most accurate data on this point; and secondly, by taking only the parents of the cancerous patients, the evidence of a family tendency to cancer derived from its existence in near relations is completely excluded; for the tendency may be transmitted from a grandparent to a grandchild, the parents being unaffected; while some of the brothers or sisters of the parent or their children may exhibit the family predisposition.

The proportion of cases in which there is a hereditary history of cancer is diminished by the fact, which Sir James Paget has pointed out, that many of the parents may never have manifested the cancerous disposition which is in themselves, having died from some other cause before reaching the period of life most liable to cancer; and, in many cases, a parent may have died of a cancer, the true cause of death being unknown to the child, who becomes afterwards the subject of cancer.

We now turn from statistics—which must be regarded in the highest degree unsatisfactory—to individual instances, of which that recorded by Broca† is probably the most remarkable. Of twenty-six individuals the descendants of Madame L—, to the third generation, fifteen died of cancer. Broca computes the influence of hereditary tendency to cancer in this family in the following manner: calculating the death rate from cancer in France as at most 4 per cent. in persons

* 'St. Bartholomew's Hospital Reports,' vol. xiv, p. 217.

† 'Tumours,' vol. i, p. 155.

over thirty, therefore of twenty-six persons over thirty, taken at random, a slight proportion over one would be cancerous ; but, in the twenty-six descendants of Madame L—, fifteen died of cancer, therefore the influence of heredity multiplied the chances of cancer by fifteen.

In regard to the heredity of cancer, the opinion of Sir James Paget must have, even from the nature of his practice alone, the greatest weight. He says:—"Every year's experience in practice among persons whose family histories are known, makes me more sure that inheritance is the great power in the production of all diseases which are not of distinctly external origin, and, among these, of cancer."*

The hereditary character of certain innocent tumours is most clearly determined, and more especially of the multiple exostoses. Marle met a case in which he traced the disease through three generations. Sir James Paget gives a case in which a son and his father were affected. "None of this man's ancestors, nor any other of his children, had similar growths, but four cousins, children of his mother's sisters, had as many of them as himself." This last instance is interesting, as it shows that evidences of transmitted tendencies, if absent in direct ancestors, must be sought for among relations of a corresponding generation. Virchow and Otto Weber have each observed cases of enchondromata transmitted through three generations. An instance of hereditary adenoma of the breast came under Broca's observation ; a woman and her three daughters were all the subjects of tumours of this description.

I know a young gentleman who has several adenomata of the cutaneous glands scattered beneath the skin at various parts of the body.† A brother, his father, and a paternal aunt, had similar tumours beneath the skin. Cases have been observed in which the common wen or sebaceous cyst on the head was hereditary. Glioma has been observed in many members of the same family, viz. in four children out of a family of seven, and in four children of the same mother. Moles and nævi are also hereditary, and this, in some instances, extends to their site.

These facts, if they show nothing further, at least prove that the disposition to tumour formation, however originating, is distinctly hereditary in certain cases ; but it is as impossible to say how far heredity extends, as, on the other hand, to fix a limit to a tendency to reversion in these abnormalities.

There appears to be no fixed rule of transmission of

* 'Clinical Lectures and Essays.'

† 'Trans. Path. Soc.,' vol. xxxiii, p. 336.

tumours to any particular part or organ ; but the same variety of morbid growth usually appears in the offspring, although perhaps in a different part.

Facts at present existing tend to show that, if organs especially predisposed to cancer be the seat of the disease, it will more commonly be transmitted to the same part in the same sex ; and, in any case, the disease will be more likely to affect the same organ in persons of the same sex. Among sixty-one cases taken from Sir James Paget's note book, Mr. Baker found that in twenty-seven the cancer in the offspring was in the same part as in that of the parent or grandparent ; in thirty-four it was in a different part, but in the first-named group the breast and uterus were exclusively affected. Of the fourteen females who died with cancer in Broca's case, in nine the disease affected the breast, four the liver, and one the uterus, and in the only male who was cancerous the disease was situated in the stomach. Sibley met with a family in which a mother and five daughters had cancer of the left breast. Sir J. Paget observed cancer of the uterus in three generations—in a grandmother, mother, and daughter.

On the other hand, cases occur in which different organs are affected in almost each individual, but these are probably the exception, and the hereditary character of the tumour is open to doubt ; perhaps the tendency may have been modified in such instances by a "cross" with a family predisposed to tumours in another part. In a case related by Sir James Paget a lady had cancer of the stomach, her two daughters cancer of the breast, and of eight grandchildren affected, in two the disease was situated in the breast, in two others in the uterus, and in the remaining four in the bladder, axillary glands, stomach, and rectum respectively. Warren saw cancer of the breast in a son, two daughters, and two grandchildren of a man who had epithelioma of the lip.

(To be continued.)

SILVER PLATE WITH TWO ARTIFICIAL TEETH PASSED BY THE RECTUM.—A woman, æt. 42, applied at the Rotherham Hospital on July 22nd, stating she had swallowed her false teeth and they were sticking in her throat. On examination with the fingers they could not be felt. On July 26th the plate and teeth attached were passed through the anus. The plate measured across about seven eighths of an inch, and on each side was a fine hook by which it was secured to the other teeth.—*British Medical Journal*.

SOME VARIETIES OF ALVEOLAR ABSCESS AND THEIR
ATTENDANT CIRCUMSTANCES;

AND

THE TREATMENT OF DISEASED AND EXPOSED NERVE
PULPS BY THE USE OF ARSENIC.*

By W. B. PATERSON, M.R.C.S.

MR. PRESIDENT AND GENTLEMEN.—You are doubtless aware that I was to have brought some communications under your notice at our last meeting, and that owing to the somewhat lengthy discussion which ensued on the reading of Mr. Hern's interesting paper they were necessarily postponed. In accordance with the wish of the Hon. Secretaries I have put my notes of them together in the form of a short paper which I shall now read to you.

Some varieties of alveolar abscess and their attendant circumstances is the first subject that I propose to consider and ask your attention to; and in dealing with it I do not intend to enter or dilate upon the general question of alveolar abscess, for to do so would take up too much time. What I desire is, to describe to you some cases of alveolar abscess that have come under my notice, differing in some respects from the form usually met with, and which I venture to think will prove interesting and instructive of their kind.

The first case that I bring before you is one of alveolar abscess occurring in a young woman, a patient at this hospital of so severe and extended a character that it has resulted in the loss of five nearly sound front teeth on the right side of the upper jaw, from the right central incisor to the right second bicuspid, and also in several sequestra of necrosed bone consisting of the sockets and outer wall of the superior maxillary around these teeth. One sequestrum in particular which formed the canine socket and also part of the nasal process of this bone, I now send round for your inspection. I may say that when it was removed it presented a larger appearance. The diminution in size is the result of the friction it has been subjected to by being carried about in my pocket. On a right superior maxillary bone I have marked out the outlines as nearly as possible of the amount of its structure that has been lost by necrosis in the case now under our consideration. The great interest that attaches

* Read before the Students' Society of the Dental Hospital of London, March 9th, 1883.

to this case lies in the rapidity and extensiveness of the damage done to the structures already named; and of this it has been remarked by the various members of our hospital staff who have seen the patient that it is seldom that alveolar abscess is observed bringing about such severe and untoward results. With these prefatory remarks I shall now proceed to read to you briefly the notes that I have taken from time to time of the case.

A. B—, a young woman, aged 22, came to the hospital last July to have some teeth stopped. An approximal cavity in the right central incisor was filled with cohesive gold, and another in the lateral incisor of the same side was excavated for a similar purpose. In excavating this tooth a fine pin point exposure was made at the end of the pulp cornu by the instrument. This was carefully capped with a small disc of address card moistened with clove oil and a Weston's cement stopping inserted *pro tempore*. About the early part of last November she came again to have some other teeth attended to. Having done what was necessary to them I removed the osteo from the right upper lateral incisor, intending to fill with gold as the tooth was comfortable; but the patient finding she could not stay long on that day, I re-inserted a similar cap and cement stopping. The pulp, I may say was living at this time. One day towards the end of December the patient, who up to that time had not experienced the slightest discomfort in the teeth, was sitting in a draught, and the current of cold air, she said "seemed to strike into" the right side of her face; very shortly afterwards she experienced a general dull kind of toothache in the upper jaw, but chiefly on that side. This toothache increased in severity during the night, and next morning when she awoke she found her face was greatly swollen, hot and painful on the right side and the right eye almost closed. The upper teeth on this side were more painful on mastication than on the other, the lateral incisor especially so. On the next day when she came to the hospital, her right cheek was greatly swollen, hot, very red, tense and shining. The right eye was not now closed; and she was in not nearly so much pain. The upper lip was also much swollen; on raising it, pus was seen to ooze out freely between the gum and the right lateral incisor. A distinct and localised swelling existed on the outside of the gum above this tooth, which when further pressed on caused yellow pus to run out around it. The tooth itself was easily movable and painful; but the central incisor, and the canine on either side of it were firm and painless. I removed the osteo filling from this tooth, opened up the pulp canal, and found that the pulp was

dead but not disintegrated. It was extracted and the canal thoroughly cleared of all contents, rendered aseptic by carbolic acid, and left patent.

No pus, however, could be seen making its exit through this opening. It still came out between the tooth and gum. A small incision was now made into the abscess and a little more pus exuded. A strong saline purgative was prescribed, hot water fomentations ordered, and the patient directed to come up again on the morrow. She came two days afterwards. The face was then very much less swollen, paler, and not at all painful. Pus escaping freely between the gum and the lateral incisor, but none through the nerve canal. The tooth was more movable. The patient, however, objected to having it extracted, so carbolic acid lotion, one in thirty, was injected up the root canal, a free incision made into the abscess cavity on the outside, and a small tent of cotton wool steeped in the carbolic lotion placed in it. The central incisor and canine on the right side were fairly firm. The patient received the same general instructions as on the last occasion, but did not appear again until the expiration of eleven days.

January 2nd.—Face still a little swollen. Pus now runs out freely between the gum and all the teeth from the right central incisor to the right second bicuspid. The right lateral incisor is so loose as to appear to be only attached by a thread. The right central and canine are very loose and have dropped considerably from their sockets. The two bicuspids are also movable. The lateral incisor was at once removed. Its root was smooth, completely bare of periosteum, and the extreme end of the fang was bent at nearly an acute angle. The canal in it was quite clear and free, however. The abscess cavity, which now extends from the right central incisor to the second bicuspid, was injected with Eucalyptus oil having previously been washed out with weak carbolic acid lotion. Above the first bicuspid a fistulous opening exists, a probe passed through this enters the abscess cavity and travels obliquely upwards in the direction of the side of the nose by a burrowed track between the soft tissues and the bone for nearly two inches.

3rd.—Less purulent discharge from the abscess cavity. The right central incisor and canine were so loose, and dropped down so much, that they had to be extracted.

They were stripped bare of periosteum, and contained pulps which were congested and in parts greyish, but not otherwise disintegrated. The two bicuspids were loose. The abscess cavity was washed out with carbolic acid lotion one in thirty strength; and the patient was ordered to

syringe it herself with carbolic lotion one in forty, at various times during the day.

5th.—Swelling of the face entirely gone. The purulent discharge greatly lessened in quantity. A considerable piece of bare bone was now felt with the probe. The carbolic acid treatment still continued.

10th.—Two small sequestra found loose and removed. They formed part of the central incisor socket. The bicus-pids are much looser than they were.

15th.—The first bicuspid was extracted as it was very loose. Its appearance was similar to the other teeth lost. Above it was found a loose sequestrum, which was removed. It consisted of the first bicuspid socket and a small portion of the outer plate of the superior maxillary situated higher up. Carbolic acid lotion still used to wash out the abscess cavity with.

20th.—A large sequestrum (the one handed round to you) was found to be loose, and was removed. It consisted of the outer plate of the superior maxillary forming part of the nasal process and the canine socket; this sequestrum corresponded to the portion of bone laid bare by the burrowed track. The same local treatment used.

31st.—Extracted the right second bicuspid as it was very loose and keeping up irritation in the surrounding parts. It, like the other teeth removed, was bare of periosteum. Resorption had commenced at the ends of its fangs. The pulp was very red and congested but it had not become diffuent or disintegrated yet. Two small loose sequestra forming part of the second bicuspid's socket were also removed.

The anterior part of the abscess cavity, and the sockets of the central lateral and canine teeth are healing up and looking well. The molar teeth are quite firm on the right side. The same local treatment is adopted as on the last occasion.

Feb. 5th.—The gums look healthy, have nearly healed up, and are becoming moulded down to the bone.

26th.—A small piece of necrosed bone, a portion of the outer plate of the superior maxillary above the second bicuspid socket has still to come away. It is at present not loose enough to remove; else the parts are nearly healed up.

So much then, gentlemen, for the notes of the case. Before discussing the causation of all this mischief it is necessary that I should say a word or two about the general appearance of the patient and the previous history. The patient's face wears the aspect of the serous or sanguine type of the strumous diathesis, that is to say, the appearance of the

skin is fair and thin showing up the underlying blue veins at certain spots. Its colour is pale except on the cheeks where it is unusually rosy for a girl living in London. The hair and eye-lashes are thin, silky, and light in colour; and the upper lip appears somewhat full and thick. In this case there is no history of a blow or other violence to the teeth of any kind. No illness or disorder; the patient has according to her own statement, always enjoyed good health. No drugs have been taken internally or applied externally of a nature likely to produce abscess or cause necrosis. The only direct exciting cause that we have distinct evidence of, is cold, and this appears to have given rise to periodontitis at first of a general nature in the teeth of the upper jaw, which became especially marked in the right lateral incisor.

It will be remembered that the patient when she came to the hospital had developed an abscess in connection with this tooth, and by extension of it forwards and backwards in the mouth on the right side much bone was laid bare by the stripping off of the periosteum, which subsequently necrosed and was removed, as were also the five teeth including the right central, lateral, canine, and two bicuspid. Now, with regard to the causation of all this mischief; I believe that cold produced the acute periodontitis which occurred in the teeth of the upper jaw, as we know it often does, and this became specially intense in the right lateral incisor, resulting eventually in the formation of an abscess in connection with it. Why this tooth should be singled out for such a sudden inflammatory process beyond all the others is thus explained by Mr. Coleman, who remarks, "that of all the teeth in the upper jaw the lateral incisor is the most liable to attacks of acute periodontitis from such causes as generally give rise to it, like cold, mechanical injury, &c." Mr. C. S. Tomes has also remarked that it is well-known for cold to provoke a sudden inflammation about a hitherto quiescent tooth, if it be in a condition of impaired vitality or dead.

The abscess and inflammatory process thus being established, took on a more severe and aggravated form. I think partly on account of the peculiar diathesis of the patient, and the fact that she greatly neglected her case by not appearing for treatment when desired. The result of all this being, as before mentioned, the death and loss of five teeth and a considerable portion of bone, from the extension of the abscess and consequent stripping of the periosteum. Only the outer wall or plate of the superior maxillary has been lost to any extent in this case, and that no greater loss was sustained is due to the large blood supply that the bone receives.

I am aware that by far the commonest cause of alveolar

abscess is death and putrefaction of the pulp, whether brought about by caries or mechanical violence ; which dead and putrid pulp, as remarked by C. S. Tomes in a paper lately read by him at the British Dental Association meeting at Liverpool, infects the surrounding parts and forms an abscess by the leakage of its resulting stinking products through the apical foramen into them. Where caries is the cause, the escaping putrid fluid is full of microzymes ; but where injury, and not disease, kills the pulp, it is free from them. In the present case, caries had not exposed the pulp in the right lateral incisor ; and the very fine exposure of it was made by the instrument. The pulp had in no way suffered from this exposure, as was shown four months after, when the filling was removed carefully under the rubber dam ; and it does not seem likely that it could be affected by the mere reinsertion of a similar kind of filling, for the tooth never developed the slightest symptom of pulp irritation or inflammation, but remained perfectly quiescent and comfortable until the sudden and acute periodontitis occurred in it, immediately after the patient had sat in a draught, which was six weeks from the time it was last filled. It has been suggested that this case might have been one of necrosis of the upper jaw in a strumous subject, the result of an injury perhaps. But this is disproved by the fact that there was a distinct absence of a history of mechanical violence and also of any strumous affection ever having existed. Besides, the sudden formation of a localised abscess so distinctly in connection with the right lateral incisor also refutes it. Having stated that I believe cold started the mischief and that a peculiar diathesis and the patient's negligence aggravated and intensified it I will say no more on the subject, but pass on to the consideration of another variety of abscess and its attendant circumstances.

The next case that I submit to your notice is one of suppuration in the cheek produced by the spread of inflammation or irritation from an alveolar abscess in close proximity to it.

The patient was a young man, aged 20, whom I saw with an abscess about the size of a walnut, situated on the outer side of the lower jaw in the mouth and connected with the stumps of the first molar. The cheek adjoining it was thickened and congested. The stumps were extracted, and at the same time a slight incision was made into the sac of the abscess to hasten the evacuation of the pus. About three weeks after this was done I saw the patient again. The alveolar swelling had entirely disappeared, and the sockets of the extracted stumps were nearly closed over by

the gum; but in the cheek a little below its centre, was a circumscribed, tense, and hard swelling about the size of a large walnut. It did not give at this time any signs of fluctuation, and was not near the surface of the skin. A week later the swelling had come much nearer to the skin surface, and now could be felt to fluctuate. From the inside of the mouth it could not be easily made out as the covering of mucous membrane was thick. It, however, was clearly unconnected with any abscess sac that had formed round the lower molar.

The skin over it was red and congested around the margins, but paler and yellowish towards the centre of the swelling; and the epidermis scaled off in flakes. A fine vertical incision was made into it, and about a drachm of pus came out. The cavity was syringed out with weak Condyl's lotion. A piece of gutta-percha tissue was inserted for drainage purposes and a pad of lint applied. The abscess cavity soon healed up and the induration in the cheek gradually disappeared. Here is a condition that is sometimes met with, which Mr. Salter, when speaking of the varieties of alveolar abscess, describes and states that he has noticed several such examples I think it is interesting as showing that an abscess in the subcutaneous tissue of the cheek may result from the spread of inflammation and irritation dependant upon an alveolar abscess without being directly connected with its sac.

The next case that I ask your attention to is one of alveolar abscess in connection with a first left upper molar spreading and implicating the antral cavity. The patient, a man, aged 29, came to the hospital complaining of a swelling in the roof of his mouth and an offensive yellowish discharge from his nose. The palatine swelling was circumscribed, about the size of a florin, fluctuating, and not painful. It was situated on the inside of the first left upper molar tooth. The alveolar margins around this tooth were expanded. The purulent discharge through the nose had existed for some three months previously. The face over the antral region on the left side was distinctly fuller than on the right. When the trouble was first noticed by the patient three months ago, it commenced by the left side of his face suddenly becoming very much swollen and painful. The first molar on the left side in the upper jaw was also painful at the same time.

This swelling of the face subsided in the course of three or four days and soon afterwards the patient noticed a discharge from the left nostril to commence. It gradually increased in quantity, became yellowish in colour, and of an offensive odour; until it was a positive inconvenience and source of great annoyance to him. Ever since the face first was

swollen a distinct fulness has remained over the antral region on that side. The abscess in the palate in connection with the first upper molar formed about the same time as the face first began to swell, and the tooth to get painful. It has varied in size, sometimes a little larger, then smaller, since. The first upper molar was very carious and broken down. On its removal the palatine root was found to have undergone resorption for about half its length. A probe introduced into the palatine socket passed up readily and easily into antrum. The palatine swelling quickly disappeared, but the antral mucous membrane continues to discharge a slightly purulent secretion. The case is at the present time under treatment and has been so for six or seven weeks. The treatment consists in washing out the antral cavity with antiseptic lotion freely, and at different times during the day. The patient is able to do this himself very well, as the palatine socket and way into the antrum has been greatly enlarged by an instrument to favour the exit of the purulent secretion. A small vulcanite piece is worn, with a solid plug of the same material passing up through the foramen into the antral cavity, and this effectually prevents all food substances from getting into it. This plate is easily and frequently removed by the patient for the purpose of injecting the antrum with the antiseptic lotion and which he causes to flow freely out by way of the nose. The lotion employed has not always been the same, carbolic acid, Condy's, eucalyptus oil, and phosphoric acid, have all been tried. It has been mentioned that a large palatine abscess formed in this case; and on the subject of palatine swellings it may be remarked that the tooth which above all others most frequently gives rise to them is the lateral incisor, the reason of it has never properly been explained. I imagine that it is not common to see such a large palatine swelling as existed in this case, in connection with the molar teeth; abscess generally forming in them on the outside of the alveolar process. In some of the text-books it is stated that abscesses in connection with the palatine roots of the molar teeth very often invade and open into the antral cavity. It is a fact worth bearing in mind, for when the mucous membrane of this cavity has become implicated by the spread of inflammation and discharges purulent secretion it requires some considerable period of time to elapse whilst using the best means of treatment before it assumes a perfectly healthy state again; as is so far evidenced by this case.

(To be continued.)

THE PROPOSED DENTAL BENEVOLENT FUND.*

By W. BOWMAN MACLEOD, L.D.S.Ed.

WHEN the establishment of the Scottish Branch was mooted, one of the chief reasons which urged me to give it my hearty sympathy and best support was, that when any subject affecting the interests of the profession was broached, the members of the Association in Scotland by having a local organisation, could conveniently meet and discuss such question, and thus possibly lighten the work of the Representative Board by placing before them, at an early date, the aggregate opinions of a section of the profession; this also, being made public, would be subjected to the sifting criticisms of other sections, and tend to the presentation of the subject in a matured and concrete form when it came up for settlement at the Annual General Meeting.

Among the subjects then looming on the horizon, and now projected within the sphere of practical discussion, is that of a Dental Benevolent Fund, and I think that as a Branch we cannot better inaugurate our annual assemblies, and afford evidence of the utility of our existence, than by giving this proposed Benevolent Fund our most careful and searching consideration. Remembering always that the institution of such a fund, unless guarded by certain salutary restrictions as to the kind of misfortune which shall participate in its distribution of assistance, has always a tendency to create the disease which it is its object to eradicate, or at least minimise; the experience of all being that *indiscriminate* charity fosters a criminal spirit of dependence, which eats like a canker worm into the heart of society, and renders chronic and rampant that which should be but a temporary affection.

To make provision for probable future necessities is a duty which is incumbent upon us as men gifted with reason, and should moreover be a pleasure to us as men who claim to have a share of that wisdom which a liberal education is designed to convey.

Such provision is sometimes made through the instrumentality of what is called a Benefit Fund. Taught by experience, men know that the incidence of calamity bears a somewhat regular proportion to any given number of persons,

* Read at the Meeting of the Scottish Branch of the British Dental Association, held at Edinburgh, on the 13th March, 1883.

although it cannot foretell the individual it may strike. Therefore members of a society combine together, and by a small present sacrifice, the sum of which is calculated upon what is known in actuarial language as the doctrine of averages, form a fund, from which, in virtue of having contributed at a previous time and in the manner agreed, a stricken member can in the hour of distress claim as a right a certain share. The existence of such a fund for a body of men pursuing a common calling, subject to somewhat similar conditions, risks, and vicissitudes, is at all times desirable, but is not at all times expedient, nor, when expedient, is it at all times possible.

Under what circumstances such a fund may be expedient or possible for our own profession, is not the object which at present claims our attention, and I simply make allusion to it that I may give emphasis to the fact that the proposed Benevolent Fund is not a fund to benefit you or me who may contribute to it, but is simply what its name implies,—a Love Gift gathered together by the benevolent out of the fulness of their means, to meet by timely help the needs of those unfortunates who may be overtaken by calamities such as cannot be anticipated by the law of averages, or foreseen by the most prudent and careful. Let it then be distinctly understood that if you subscribe to this fund you give in the hope that you may never receive, and that no subscription, however large, can constitute a *claim*, although it may be adduced as a very strong reason in support of a claim; otherwise where is your *Benevolence*?

But before we set our hands to the formation of such a fund it becomes us as prudent men to inquire into the necessity for, as well as the expediency and the practicability of, establishing such a fund.

The necessity cannot unfortunately be doubted, nor have we far to seek before we find not one, but many pitiable pleading arguments, that like ghastly dreams pass before our consciousness, and speak of young lives jubilant in power and will, working cheerfully to lay up store against a rainy day, but, alas! suddenly enveloped in the paralysing embrace of sickness. The erst willing hands that would have worked the flesh to the bone ere the young ones had wanted bread rendered inert for ever, and the erst cheerful and anxious mind, its cheerfulness gone, its anxiety increased, tortured by the double misery of being not only unable to provide, but feeling himself a living wreck, and a burden upon his weak and helpless dependents. Or, again, mark him who by prudence and labour has amassed a competence, and now looks forward to the peaceful enjoyment of his well earned

repose. In a moment he falls. The security upon which he rested proves false, and he is hurled from the height of his comfort into the trough of undeserved, unexpected, and uncongenial poverty, and that at a time of life when the ordinary frailties of age preclude the possibility of his earning sufficient for his daily needs.

Instances might be multiplied, but let these two pictures suffice, for if they have existence, and we all know they have, they are sufficient to establish beyond doubt the necessity for a Dental Benevolent Fund.

That it is expedient may, I think, be conceded without further argument than specifying reasons in support. 1. If necessitous cases exist it is expedient that we should attempt by organised benevolence to meet the cases promptly and substantially. 2. Organised benevolence is less likely to be imposed upon than private benevolence. 3. It is not so demoralising as individual charity. 4. It can do more good with less waste.

That the fund is practicable in its establishment and in its *continuance* is a matter which is more open to difference of opinion.

But I have no doubt of its practicability, providing—

1. That we unite in singleness of purpose on the broad ground of giving in order that the greatest good may reach the most clamant wants.

2. That each gives not only now, but now and in each coming year, a fair share of that portion of his income which all should set aside for other and more holy purposes than worldly prudence dictates for *his own* possible misfortunes.

3. That we do not dissipate our resources by granting larger sums than the interest of our funded assets and the minimum of probable annual subscriptions allow; or, better still, that the Committee do not anticipate the income, but only begin operations when sufficient sunk fund has been collected and the first annual subscriptions have been paid, and spend in this year only what they have collected in the former one. (This, I think, would be the more certain way to make the fund enduring, as we have no guarantee of the subscriptions being either regular in their transmission or constant in their amount, beyond that faith in our brethren possessing a share of that common heritage of humanity, "the milk of human kindness," which prompts the strong to help the weak, and which, like the widow's cruise of oil, increases in proportion as it is poured out by the willing hand actuated by the greatest of the graces—Love, alias Charity.

4. It may be that at first the amount available for distribution will not reach the expectations of the sanguine, or come near the sum required to give substantial aid to all the necessitous cases brought before the Committee; nor is it absolutely necessary in making a beginning to have the full amount in hand which the experienced know to be required to do all the good that could and should be done, it is only necessary that the Administrative use the means in hand judiciously, and show that the means at their disposal lie far short of their wants, when I have no doubt but that the fund will grow year by year, and in time, as the members of the profession get educated into the duty and pleasure of helping the more unfortunate of their professional family, the sum required will flow into the coffers of the Executive. Let no man, however, take this hope in the future as an excuse for stinting his help in the present, for although the whole sum which experience shows to be necessary to meet the claims of probable necessity is not required to start such a scheme, it is absolutely essential that a substantial foundation be guaranteed on which the future may be built; and you have in the circular letter addressed to you by the Hon. Secretary of the British Dental Association, a sum stated which, though at first sight may appear unnecessarily large, will upon more mature consideration and the application of a simple test in arithmetic, seem all too small. Is the profession, then, prepared to make up this sum? On its,—that is, on our,—prompt and hearty answer depends the endurance of the scheme; the golden brick must form the keystone of the structure, and without one of a goodly size the archway of charity supported therefrom will afford but scanty refuge or relief to those who seek its shelter from the biting winds and cutting sleet of poverty and distress.

5. There is yet another thing required before such a scheme can be said to be practicable, and that is, to get men having time and ability to manage the fund gratuitously. Where in our profession can we get them? The answer is fortunately at our hand. From the *membership* of the British Dental Association. What better guarantee for the safety and proper administration of the fund could subscribers have than that their almoners be selected from an honorable body of gentlemen, members of an organised and responsible society?

I have emphasised the word “membership,” for I have nowhere seen it proposed that the ordinary executive of the Association should control the disbursements; in any circumstances this would not be expedient, nor would it be just or practicable if subscribers as well as recipients are to be

found outside of the Association, as I think should and must be the case if the spirit of benevolence is to actuate our offerings and control the actions of the administration. And for this, among other reasons, that the ordinary Executive is chosen by members of the Association as such ; and these may not all be subscribers to the fund. At the same time it is not only expedient, but an absolute *sine quâ non*, if the fund is to be taken under the wing of the Association, that the Benevolent Fund Executive be chosen from the members of the Association, the choice being limited to those members who evince their interest by their being donors or subscribers. On the other hand, as the subscribers may not all be members of the Association, it is but right that some reasonable provision be made, which would enable them to have a voice in the selection of the men to whom they entrust their subscriptions, as well as a voting power in the selection of annuitants, should the funds permit such a class of beneficiaries being created.

Nor would this Board or Committee be confined to London, or any other centre, for as the claims upon the fund would come from all quarters, so would the Committee require to be sectionalised, in order that the claimant's necessities, &c., might be the more readily investigated by local inquiry, and thus avoid as far as possible the presentation and granting of either bogus or unsuitable cases.

What will constitute eligibility of claimants? This proposed fund being a professional fund, the recipients of assistance to be derived therefrom must of necessity be members of the profession, and these may be ascertained on reference to the Dental Register. Let us take inscription in the Dental Register as a broad principle from which we can depart only under urgent and peculiar circumstances. But say some :— "The Register! why, we know it contains a whole host; more than one half of the legally enrolled are only so-called Dentists, who have not a tittle of claim to be considered *ipse facto* Dentists, being neither more nor less than chemists, and shall we subscribe that they may reap the benefit?" Yes, we must take them all in, for the law says they are Dentists. We must, whether we like it or no, put up with these strange bed-fellows. If we do not we shall get no committee to undertake the collection and disbursement of the fund which claims to be benevolent, and is for the good of the profession at large, if they have to refuse any claim point blank upon the plea that the claimant is not one of us, when he can point to the Register and say "There is my name, the law says I am a Dentist, and confers all the privileges of one upon me. The cold, hard-hearted law ; and yet you

who represent yourself as the Samaritan seeking whom you may succour, refuse me help in the hour of my need, because forsooth, I am a chemist, and come between the wind and your nobility by selling drugs as well as teeth. Such benevolence is not worthy of the name." Therefore, I say, anomalous as the conjunction may seem, uncongenial as the brotherhood may be, let us accept the conditions which certain men in the name of the law have forced upon us, and looking forward to the future, thank God that the encumbrance is but of a temporary nature, which will soon vanish never to return; that the drag upon us will year by year become less and less. In the meantime do not allow the unsought and undesirable companionship to freeze up the springs of our love, or constipate the bowels of our compassion. For believe me this incubus is but a nightmare, which is begot by want of thought, and which will vanish when the thoughtless shake themselves and think—

1. That the only claim that can be recognised is need.

2. That the needy must show that they have no other source of adequate help. *Ergo*, what chemist can show this last while there exists a wealthy Chemist and Druggist's Benevolent Fund, to which being more nearly related he must first apply.

Nor must we endanger the success of the scheme by refusing our support to it unless we are assured that advertisers and quacks and incompetents generally are to be rigidly excluded as ineligible on the ground of sinning against professional ethics. Remember that charity covereth a multitude of sins. Accept, then, the Dental Register with all its inaccuracies and anomalies as the standard of claim, and leave it to the wisdom of the Committee under guidance of wise bye-laws to steer clear of misapplication of the fund.

I accept then as granted that the fund is to be allotted to the needful in our own profession, and that inscription in the Dental Register is to be accepted as proof of the claimant being a Dentist. But we have yet to settle under what circumstances and what class of unfortunates shall be eligible for relief, and here again it is quite possible that there may be found some ground for divergence of opinion, and if so, I trust that opinions will be calmly and quietly put forward in the spirit of securing the greatest good to the most clamant wants.

We may, I venture to think, divide the eligible into four classes.

1. Those who through sickness or misfortune require temporary relief.

2. Those who through permanent sickness, or misfortune and old age, require prolonged relief.

3. Orphan children.

4. Widows.

It may appear to some of you that in laying down this order of preference, I am putting the cart before the horse, and am myself forgetting the rule which I have laid down, viz. the greatest good to the most clamant cases, but I hope to give good and sufficient reason for so laying down this order of claim.

In founding this fund we must as far as possible avoid everything which will tend to encourage imprudence, or want of thrift. We must never lose sight of the fact that a Benevolent Fund is not a provision against misfortunes which can be provided for, and ought to be guarded against by every one gentle and simple, according to his pecuniary ability, and in view of the social status which he at present enjoys, or towards which he desires his family to occupy and maintain. And as not only the actuarial doctrine of averages but our own daily experience, teaches us that the bread winner not only may, but all too frequently does die before his progeny have reached the self-supporting period; we must do everything in our power to encourage the thoughtless, the improvident, and the off-putting to make the necessary provision against such an eventuality by telling him while he is yet young and has the health to work, and the means which cometh of work that he must provide for his possible widow and orphan, as well as support his wife and children. There was a day when the widow and the orphan were always the first charge upon the community, but in this age of insurance the charge is not so necessitous in a pecuniary point and is becoming less and less so, and the *in loco parentis* is becoming more and more a matter of wise counsel and fatherly intercourse between the widow, the orphan, and the guardian. Thus you will see that speaking generally, the mere fact of widowhood, or orphanage, even if in reduced circumstances, might not be viewed as a strong claim upon the fund, unless the collateral circumstances, which could only be weighed in each individual case, were such as to prove reasonable attempts of the deceased to make provision for the future, or unless the distress was caused by persistent neglect and folly, or bad speculation on the part of the late head of the house in which the survivors had no share, and over which they could exercise no control. We are still left with two classes of probable beneficiaries, claiming relief under a class of depression which, being more rare in occurrence, and when occurring more variable in duration and

intensity of effects as to place provision against such calamity beyond ordinary prudence. I refer first, then, to those requiring and deserving help to tide over temporary difficulties, and such cases could be amply illustrated from past experience, but let us look at one which will help to explain our meaning. A young man married, with a family, is in business, or, it may be, only an assistant; he has got over the first years of hard struggle and is just beginning to feel his feet, and sees before him a steady walk to success and competency, he has made all prudent arrangement against calculable contingencies, but he is laid low upon a bed of sickness, and his illness is of such a protracted nature that he has exhausted all the usual resources in sustaining himself and family; the bare necessities of existence are all that he can command, and perhaps not even these; the insurance premium falls behind and is likely to be lost unless help, immediate help is forthcoming. Now to what better use could benevolence put the fund than by keeping up the policy until his health was restored and he was able to resume work, tiding him over this temporary disability, and retaining him the provision which in the event of this, or any subsequent illness terminating fatally, would keep the widow and orphan from poverty, and from the fund. Now, I grant you, that this may seem a weak case with which to illustrate an argument, but I necessarily and purposely give you a weak case as real strong ones cannot be foreseen, and except in a very general way, cannot be realised until they occur.

This class of cases would, in all probability, be assisted from the annual subscriptions, and would be directly administered by the Committee, and that in confidence the recipients of such help to be known only to the Committee and to an auditor appointed by the subscribers annually. The character and extent of the temporary help chargeable against subscriptions could only be fixed as the cases came up, and would be subject to the wisdom of the Committee and the amount at their disposal.

There remains the last class, viz. those whose unexpected misfortune, combined with old age or permanent physical incapacity, require protracted relief. I need not take up your time by illustrations or types further than the one mentioned in the previous part of this paper.

This class of cases could only be substantially helped from the interest of the sunk fund, as the nature of the help would probably require to be continuous or nearly so, and an annuity could not be granted from annual subscriptions, the amounts of which in the nature of things must be fluctuating. The interest of the sunk fund would naturally

bear the burden of this charge, and therefore the need of a large amount of capital. In the circular already referred to it is stated that £5000 bearing interest at 5 per cent. would yield £250, and so it would if good security could be found giving such a high percentage. But under ordinary circumstances this is not to be had, and a trust cannot run risks which an ordinary individual may. Four per cent. is the maximum which may be safely counted on, and this lops off at once £50 from the estimated income, which would only give the little sum of £20 to ten or £30 to seven annuitants. This might do in the meantime, if no better could be had, and as the income increased by new donations and by legacies better could be done.

In bringing this subject before you I have endeavoured as far as possible to keep to a broad statement of general principles, avoiding the consideration of minute details, and I do think that in the initiation of such a scheme these should be avoided. Our part of the programme is to decide as to the propriety of establishing such a fund. If we decide in the affirmative, it then becomes our duty to grasp the general principles which shall guide its distribution, and to render it practicable by supplying our proportion of the necessary capital and annual income, leaving to a wisely chosen committee the construction of bye-laws and elaboration of details, in which they will be better guided and assisted by a careful inquiry into the regulations of older societies of a similar nature, than they possibly could be by us thrusting before them advice which, however good it might seem, lacked the test of experience.

I trust, then, that the conversation which it is the intention of this paper to elicit, will be marked by a catholic spirit, and that all will endeavour to avoid side issues and petty details, the discussion of which at this stage will not tend towards the speedy realisation of the Benevolent Fund.

'Twas to share wi' the needfu' our blessings were gi'en,
 An' the friend o' the poor never wanted a frien';
 He who tempers the wind to the lamb that is shorn
 Will bless those that take from life's pathway a thorn,
 An' the cup o' cold water that kindness bestows,
 On the heart back in rivers of kindness o'erflows.

ERRATA.—In our last issue the date of the Annual Meeting of the Midland Counties Branch of the British Dental Association, at Shrewsbury, was inadvertently stated to be the 23rd instead of Wednesday the 25th inst.

British Journal of Dental Science.

LONDON, APRIL 16, 1883.

It has been wisely said that the safest way of arriving at a correct estimate of the condition of any section of society, is to read its literature. That professional life generally is more particularly fed by the books produced by its class will ever hold good, and where activity in literature does not exist, a sleepy state of scientific research is sure to prevail. We none of us can afford to ignore the claims made by the medical profession as a body of men given to book making. Medical literature has, more particularly of late years, taken a lead in all scientific inquiry, and following in the wake of so distinguished a precursor, we have Dental literature making itself heard, and what is more, making itself respected in the midst of our councils.

The address given by Mr. Oakley Coles before the British Dental Association in August last (a report of which appeared in these pages), is undoubtedly the most comprehensive history of Dental literature ever written; every little item is withal so correctly noted that the reader rises from its perusal with an advanced opinion of the progress made in this branch of the healing art. Until this paper was published the profession was in a state of uncertainty as to the extent and character of our literature, and we have been favoured with a private view of an appendix which will follow the publication of the paper, in which every work, paper, or pamphlet written in all European languages, directly or indirectly connected with Dentistry, is classified and tabled according to date. Mr. Coles has not been contented to take the 'Catalogue' of the Odontological Society with its appendix only, but he has ransacked the book shelves of every library, public and private; he has scanned the flyleaves of every work bearing on the subject, and also classified all the

papers given before the Odontological Society. The labour of such an undertaking can hardly be over-estimated, and the value of such a list to all librarians is incalculable. By placing an asterisk at the side of all books at present in any library, this list becomes a Dental catalogue of that particular institution. It also forms a guide in the purchase of works or additions needed to make a library complete.

The additions that are now being made to the Dental Hospital include the arrangement of a new library and reading room, and it cannot be too widely promulgated that after the alterations are effected, members of the Odontological Society, and indeed, any respectable Dental Surgeon, with an order from the librarian, can use this room from six to eight every Wednesday evening for the purposes of study or research, and we are somewhat surprised that members have not more fully availed themselves of this privilege in the past; indeed, when we recall the number of institutions devoted to Dental instruction, when we recall the number of those employed in teaching, and the long list of those who are being taught, and the vast aggregate of Dental operations that are continually being performed, we feel inclined to ask why there should be so much apathy in recording interesting cases? There is always something new presenting itself, and even if disease should continually repeat itself, our treatment will differ. In conversation the Dental Surgeon is usually intelligent and decidedly active, he will "button-hole" his neighbour upon the smallest provocation, and give his experience pretty freely, but in nine cases out of ten, if you ask him to write down his opinions or his treatment, he will plead the want of leisure. Now, we are thoroughly convinced that this seeming apathy arises principally from a want of application, it does not arise from a want of information or a want of observation. If the student would only dismiss from his mind the idea of "fine writing," and closely stick to a plain statement of facts, he would be happier in his exposition, and we, as professional workers, would be the gainers. Private practice and hospital work are two distinctly different things; the hospital teams with opportunity of research but sparingly open to private

practitioners, and yet more cases are recorded out of hospital than in it. The desire to be graphic—indeed, we might say to be sensational, frequently obscures our statements; if the writer has only got a foundation of facts, the superstructure of adornment can easily be added. As a sub-editor once remarked to a nervous contributor, “My dear sir, do but give us the brains and we shall be always happy to put in the grammar.”

A CHAMPION of truly liberal and benevolent principles, combined with practical justice to and for all concerned, has been found for the proposed Benevolent Fund in the youngest branch of the British Dental Association. It is the only broad and genuinely benevolent, whilst at the same time practical, scheme that we have seen publicly brought forward by any member of the Association, and we are pleased that it is such an influential member as Mr. Bowman Macleod, of such a thoroughly representative branch of the Association, who has had the shrewdness to propound such a wide-spread application of whatever funds may be placed at the disposal of any committee that may be formed.

No description could perhaps better indicate what the object a benevolent fund should be than the following, which occurred in the paper read by him in Edinburgh, on the 13th of March last (which will be found at p. 367), viz. “A love gift gathered together by the benevolent out of the fulness of their means, to meet by timely help the needs of those unfortunates who may be overtaken by calamities such as cannot be anticipated by the law of averages, or foreseen by the most prudent and careful. Let it then be distinctly understood that if you give, it is in the hope that you may never receive, and that no subscription however large, can constitute a *claim*, although it may be adduced as a strong reason in support of a claim; otherwise where is your *Benevolence*?”

Not only does he thus advocate true charity but he also makes the strictly impartial suggestion that no matter who subscribes, or who declines, ALL on the ‘Dentists Register’ shall be eligible for relief; and, as we take his meaning, even

others "under urgent and peculiar circumstances." He would only stipulate that the recipients should be those whose necessity has been brought about by genuine and unavoidable misfortune, when as far as the funds would allow he would relieve with an open heart and an open hand. Christian charity can go no further, and we heartily reciprocate his sentiments. But, with all his tender-heartedness for the afflicted, he would be hard as adamant where duty and justice required a firm hand. He would—and rightly too—whilst forming the chief committee of control of the fund from the "*members*" of the Association, yet only allow such members so to officiate provided they were subscribers, and also permit *all subscribers*, whether members of the Association or not, to have a vote in the election of such committee as well as in the selection of annuitants.

On such broad principles of benevolence and justice such a fund would be sure to thrive and grow from year to year, and with such a fairly representative committee no fear need be entertained of injudicious application of the moneys collected, all too small, as they would be only too sure to be, for the amount of misfortune that would be presented for relief, especially in the early years of its foundation and useful operation.

THE second reading of the Medical Act Amendment Bill took place on the 4th inst. in the House of Lords, and we are glad to find that so far no comments have been made upon the Dental Section. Lord Carlingford, who is presenting the Bill, impressed the House that April 18th was the day appointed to go into Committee. The Royal College of Surgeons of England and the Royal College of Physicians of Dublin have already sent in petitions against certain parts of the Bill, and it also transpired that the Scottish universities were greatly interested in its progress, as material changes would be made in their organisation, although not of a detrimental character. When such facts as those stated by Lord Balfour of Burleigh are seriously taken into consideration we shall be in a position to determine in what

way medical education is to be conducted. Is it the perfect knowledge of anatomy, physiology, medicine, and the other subjects involved, that the student is expected to possess, which in themselves are almost enough to occupy the minds of ordinary persons, or must there be in addition an equal knowledge in classics, physics, and mathematics? The physiologist who is wholly ignorant of physics indeed lacks half his reasoning process, and he who is unacquainted with modern languages may be for ever kept uninformed of those valuable discoveries of German and French investigators. We cannot but admire the man who has accomplished all this, but time must surely be given to obtain it, for if this deep study is to be made in five or six years great risks to health will be run. In our own specialty we know there are some who have gone through the curriculum within the limited time of four years, but their thoroughness in each branch is sadly deficient. We enjoy the decision of the General Medical Council that one year only of the term of apprenticeship will be counted, so that it leaves three years to be devoted to our special studies. In a month we shall know more about this question of general and special education, and our readers will do well to study the different views taken of the situation in the leading medical journals.

Manipulative Miscellany.

All instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month, they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits, and without any intention or wish to pit one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

DR. TELSCHOW'S DENTAL REFLECTOR.

MESSRS. C. ASH AND SONS introduce a new gas reflector designed to stand on table or wall bracket, it has a Sugg's

Argand burner, giving a clear, bright light, behind which is a concave glass mirror, and in front a taper tube about seven inches long, fitted with double convex lenses at either end, and so focussed that a clear, concentrated light of about eight inches diameter can be directed on to the face of the patient. The light thoroughly illuminates the oral cavity, and renders the walls of carious teeth fairly transparent, and in this respect excels the daylight such as we have in our crowded cities. It also has an upright semicircular shade in front of the chimney as a protection both to the patient's and operator's eyes.

The reflectors, lenses, and shade are connected in such a manner that they may be rotated or inclined upwards or downwards to any desired angle, without altering the perpendicular of the gas burner ; this is fitted with an ingenious little arm having two silk cords attached (to avoid all chance of burning fingers by heated taps), tension on the one turns the gas full on, and on the other reduces it to any size or so low as to be but just alight and ready for further use at a moment's notice.

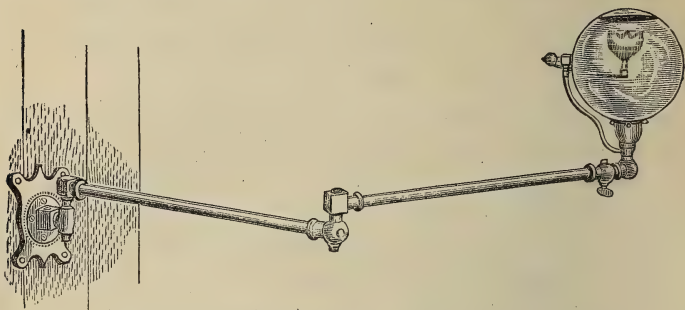
The whole forms an elegant stand and occupies but little space, whilst the length of the focus of its lenses enables it to be placed sufficiently far from the patient to obviate any unpleasant heat engendered by their powerfulness. The strong concentrated light will enable an operator to detect caries where even good daylight fails to reveal them, and hence it may be considered a valuable addition to the surgery. We should think medical practitioners might often find it exceedingly useful.

RUTTERFORD'S GLOBE REFLECTOR.

MR. RUTTERFORD has designed two forms of the above reflector ; the one for table use and the other for a double armed wall bracket. The principle with each is identical, the choice being only one of convenience of position ; therefore one description will suffice.

A clear glass sphere of about six inches diameter is filled

with water and inverted, the neck being introduced into a socket and screwed there securely, behind this globe is an ordinary fish-tail gas burner arranged on two semicircular arms so that the flat side of the flame is always presented close to the globe; these arms can be moved anywhere around the globe without ever altering their relative positions, but admitting of directing a flood of diffused, but brilliant light on the head of the patient. Its distance is not very impor-



tant, but the further it is from an object the greater is the circle of pleasantly bright but not distressing light it yields, whilst at the same time the whole room is well lighted.

The bracket form is substantial and nickel plated, whilst the table form is mounted on a neat stand with three wide spreading feet, rendering it being upset most unlikely, whilst the three feet lifting the stand off the table enable it to pass *over* instruments, &c., instead of requiring a clear space.

Should the globe be broken another (which should be kept on hand) can be substituted in a few minutes, and by filling it with blue tinted water to overcome the yellow of the gas, a pleasantly soft, neutral tint can be produced.

A NEW METHOD OF PIVOTING TEETH.

WE inadvertently gave the name of Dr. Redmond as the introducer of this process, described by us in our issue of April 2nd, which we regret to say is incorrect, it should have been Dr. Redman of Brighton.

NEW INSTRUMENTS.

MR. H. B. MOSELEY, of Leeds, has sent for our inspection three instruments which have been invented by him, and of great service in his practice. The first is an amalgam evernes, which consists of a steel rod upon which a cylinder works, so that the cylinder being filled with amalgam it is pressed against the cavity, the rod acting as a plugger. The second one adopted at right angles, and the third a contrivance for carrying the cardboard discs for covering exposed pulps. The construction is simple, consisting of three parts only, a handle, to which a piece of platinum wire of pin size is attached and pointed, and a spiral spring which works upon the wire. To apply it to use the pointed platinum wire is bent so as to reach the required spot on the cavity, and pinches the card disc, which when carried to its place is held by means of the spiral spring, which is pushed forward on the wire.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

ORDINARY MEETING, HELD MONDAY, APRIL 2ND, 1883.

JOSEPH WALKER, M.D., President, in the Chair.

To express the sympathy of the Society with Mr. Thomas Underwood under his recent bereavement a unanimous vote was carried from the chair.

The minutes of the previous meeting having been read and confirmed the President announced the presentation to the library of the Society, of the new work of Dr. Thorogood on *Materia Medica*.

Messrs. Bonell, John Faulkner, Wm. Hern, W. R.

Humby, and another, having signed the obligation book, Mr. Hutchinson announced the following presentations to the Museum. A lower wisdom tooth with three well-developed fangs, and a rudimentary fourth, and an exceptionally small tooth removed from the place of the upper wisdom tooth, evidently being the representative of that tooth, the gift of Mr. Stocken, and an upper molar, the entire length being one and three quarter inches, and a canine one and a half inches in length, the gift of Mr. Corbett.

Mr. SUTTON then read his paper on the "Development of the Inferior Maxilla" in the place of Dr. Dyce Duckworth, who was compelled to leave England for a short time owing to ill health, and was followed by the discussion in which Messrs. Gaddes, C. S. Tomes, and S. J. Hutchinson took part.

Mr. Alfred Coleman's paper on the "Spontaneous Fracture of the Teeth" following, the President prolonged the meeting, to enable it to be fully discussed, as some very interesting points had been raised. The President, Messrs. Stocken, W. F. Bennett, S. J. Hutchinson, F. H. Weiss, W. C. S. Bennett, C. S. Tomes, Wm. Hern, and Sutton, having expressed their views, the meeting adjourned until Monday, May 7th.

STUDENTS' SOCIETY OF THE DENTAL HOSPITAL OF LONDON.

ORDINARY MEETING, MARCH 16TH, 1883.

W. C. STORER BENNETT, Esq., F.R.C.S., L.D.S., President, in the Chair.

THE minutes of the previous meeting were read and confirmed.

THE PRESIDENT showed models of a case in which the upper laterals had not been erupted, and there was no sign of their appearance, although the patient was over thirteen years of age.

MR. HERN also brought forward some communications.

MR. PATERSON asked a question of the Secretaries respecting some slight incorrections as to the spelling of the members' names in the printed copies of the 'Transactions' of the Society, to which Mr. PEDLEY replied.

THE PRESIDENT then called upon Mr. Paterson to read

his paper on "*a. Some Varieties of Alveolar Abscess and their attendant circumstances; b. The Treatment of Diseased Nerve Pulps by Arsenic.*"*

This was followed by a prolonged discussion, in which the following gentlemen took part:—Messrs. Hern, Pedley, Fox, Davis, Robbins, Stainer, Gordon, Hooper, Baldwin, Petherbridge, Mundell.

At the close of the discussion Mr. PATERSON replied.

A cordial vote of thanks to the reader of the paper was proposed by Mr. MARCUS DAVIS, and carried *nem. con.*

The PRESIDENT then announced that at the next meeting a paper would be read by Mr. Cornelius, and the proceedings then terminated.

Literary Notices and Selections.

THE OPINION OF A "DENTAL SURGEON."

To the Editor of the 'Lancet.'

SIR,—I feel certain that any unbiassed person who read my first letter to you, elicited by an annotation in your journal which unintentionally seemed to class the qualified and unqualified in my speciality together, would see that it was animated by a desire to uphold the social and scientific position of a branch of surgery as much entitled to recognition as any other when legitimately and honorably practised. It is remarkable that those who profess to reply to it impute opinions to me which I have never held, much less expressed, whilst they corroborate my statements. Their resort to personalities is regrettable, as my communication referred to measures, not persons. Such weapons proclaim a weak cause, and never strengthen argument.

My contentions were:—First, that it was unjust to the whole medical profession that wholly unqualified persons should be permitted to call themselves Surgeons or even Dental Surgeons. Secondly, that the Dental Registration Bill had permitted individuals of the lowest type to register themselves as Dentists when such an excellent opportunity presented itself of purifying the profession by purging it of

* See p. 359.

persons not carrying on their business—I will not say their profession—in a reputable manner. How do my critics answer these propositions? Simply by assenting to them! The first writer commences by a totally irrelevant attack upon the Association of Surgeons Practising Dental Surgery, which was founded for a special purpose, and which, despite his assertions, is by no means effete, and then enters upon a prolix digression on matters to which I did not even allude. I never denied that if we wait long enough—*tout vient à qui sait attendre*—benefit may result from the Act in the far future; but I maintained that proper means had not been taken by the promoters of the Bill to prevent the registration of those who are an opprobrium to any liberal profession, mentioning the fact that shops existed over the disgusting show cases of which the owners advertised themselves as "Registered Dental Surgeon," or even "Registered Surgeon and Dentist." Your three correspondents unanimously accept these assertions. The first writer says: "It is undeniable that there are undesirable registered Dentists;" while he cannot deny the existence of the shops which have indubitably increased threefold since that "disastrous"—I never said "monstrous"—legislation which has so degraded the present status of Dental Surgery. Prior to the passing of the Act, their proprietors were outside the pale of professional respectability. Now they find a legal sanction. This correspondent assumes that I am opposed to the Dental licentiateship; whereas, had he read my letter, he would have seen that I expressly stated that "I did not allude to those who hold the Dental license of the College of Surgeons." And assuredly, had the Bill required unqualified practitioners to become licentiates, or had it only admitted, after careful selection, those who conducted their practices honorably to registration, there are few, certainly not myself, who would not have supported such healthy legislation. Thus, the letter I am criticising, being based upon false premises, must result in false conclusions; indeed, it is hard to imagine the object with which it was written, inasmuch as, whilst it most inexcusably misrepresents my views, it supports my contention and confirms my propositions. The author of the second letter somewhat more courteously assumes my ignorance of the provisions of the Act, but admits that the "inferior practitioners" recognised by it have no right to assume "the title of Surgeon or Surgeon-Dentist"; whilst even Mr. Cox (of whose existence, if he will pardon me for saying so, I have never heard until I read his communication of to-day) confesses that he is "as much disgusted with the admission of an indiscriminate host as the 'professor' (*sic*)

himself." I very much regret that inasmuch as he is so particular in emphasising my legitimate title I should have done him the injustice of depriving him of his, especially as he is in accord with me as to the impropriety of admitting unqualified empirics to equal privileges with those who are generally or specially qualified. Finally, with regard to the sentiments which render me too sensitive, perhaps, about the social position of my speciality in surgery, I leave their interpretation to my friends who know me, not to those with whom I am not acquainted.

The suggestion that those who sympathise with me assume pre-eminence on account of their possession of a medical diploma is ridiculous as it is uncalled for, though I frankly confess that I am ashamed to be associated, even in name, with many of those whom recent legislation has permitted to register themselves as "Dental Surgeons." Here a medical qualification does afford protection. My opponents seem to forget the trite motto "*Quot homines, tot sententiæ.*" In upholding my own opinions I should never be so illiberal as to quarrel with them for having theirs, however much they might be opposed to mine.

I am, Sir, your obedient servant,

S. HAMILTON CARTWRIGHT.

DEATH DURING THE ADMINISTRATION OF DICHLORIDE OF ETHIDENE.

WM. —, aged twenty-six, a weakly-looking man, was admitted on the morning of Nov. 21st last, at the Liverpool Eye and Ear Infirmary suffering from a wound of the right eye, inflicted with a chipping of steel, half an hour previously. On examination the foreign body could be seen in the lens. Mr. Edgar Browne decided that an attempt should be made to extract the body. The house-surgeon, Mr. Charles Shears, on auscultation of the patient could, detect no cardiac murmur, but the sounds at the base were not distinct, and it was not thought sufficient to contra-indicate the administration of an anæsthetic. Dichloride of ethidene was then given on a small flannel inhaler, and the patient came under its influence slowly but quietly. In ten minutes the man was fully under the influence of the anæsthetic, and Mr. Browne made the corneal section. Almost immediately the pulse (which had been carefully noted all through) became very feeble and the

patient very pale. The head was lowered, the tongue drawn well forwards, and artificial respiration was commenced without delay. Air passed freely in and out of the chest. Nitrite of amyl was then applied to the nostrils, and the patient was inverted. He, however, showed no signs of returning consciousness. Artificial respiration was carried on for nearly half an hour, but without any beneficial result. Between three and four drachms of the ethidene were used.

By order of the coroner, a post-mortem examination was made thirty-six hours after death by Dr. Alexander Davidson, physician to, and lecturer on pathology at, the Liverpool Royal Infirmary. On removing the heart, it was found to be in a flabby condition, and the walls were very thin; all the valves were healthy. On the lining membrane of the aorta, one inch above the valves, and extending for some distance, small fatty patches were seen, as also on the thoracic aorta, and in one place there was the appearance as of a healed atheromatous ulcer. The heart muscle was examined microscopically, and found to have undergone extensive granular degeneration, the nuclei especially being surrounded with granules. The right lung was deeply congested.

At the inquest, evidence was given to the effect that the man died from cardiac syncope, produced by the administration of an anæsthetic to a patient whose heart was in a condition of commencing fatty degeneration, which condition could not have been discovered during life, and which certainly was not suspected in so young a man. The jury gave their verdict accordingly, adding that they thought "everything was done that could possibly be done, or that was customarily done." Since the early part of 1879 dichloride of ethidene has been largely used at the infirmary, it having been administered between four hundred and five hundred times, and up to this present unfortunate occurrence without any mishap. The absence of struggling, with which patients come under its influence, its pleasant smell, and the very little sickness following its administration, caused ethidene to be regarded as a specially suitable anæsthetic for operations on the eye.—*Lancet*.

NEURECTOMY OF INFERIOR DENTAL.

DR. SONNENBERG, of Berlin, has instituted a new operation for the excision of a portion of the inferior dental nerve, which he describes in the 'Berliner Klinische Wochenschrift'

for October 16. It will be remembered that the nerve in question enters its bony canal on the inner surface of the ramus of the lower jaw, under cover of the internal lateral ligament. Dr. Sonnenberg found in the dead subject that, having the head held strongly backwards, it was possible to reach the inferior dental nerve by a neat incision, which was begun one centimètres and a half in front of the angle of the jaw, and continued along the (in this position) ascending border of the body of the lower jaw for three to four centimètres, as far as the facial artery—an incision which corresponds roughly to the insertion of the masseter muscle. We may say that two centimètres and a half is an inch, as nearly as may be. This being done, the inner surface of the lower jaw-bone must next be cleaned up to the internal lateral ligament, which usually lies about two centimètres and a half from the angle of the jaw; the insertion of the internal pterygoideus must be separated from the bone; the ligament and nerve may now be felt, and with good light the latter can be seen in the bottom of the crateriform wound. Next a strong blunt-pointed hook must be conducted by the finger up to the ligament, and then somewhat upwards along the ascending ramus of the jaw, and at the same time inwards in the direction of the buccal mucous membrane. In this fashion the nerve is hooked up without touching the neighbouring artery, which lies very close to the bone. The lingual nerve is quite to the inner side and is not meddled with. The inferior dental so secured is very extensible, and can be drawn down towards the angle of the jaw, and a portion easily cut therefrom. The other methods (done either from the mouth, or by trepanning the lower jaw from the outside) are nothing like so good as this new operation, according to the author. The advantages are enumerated:—

- (1) The wound is the smallest possible;
- (2) the operation is done comfortably, provided the formal retraction of the head is thoroughly observed;
- (3) the bleeding is insignificant;
- (4) the capsule of the submaxillary gland is left intact, and so no burrowing of pus can take place there;
- (5) the nerve is easily found and brought forward alone;
- (6) a good piece can be excised, because the nerve can be drawn out so easily;
- (7) the wound is favourably suitable for healing;
- (8) the scar is small, and in an unobjectionable place.

Dr. Sonnenberg has operated on the living subject three times for neuralgia, with eminent success both as regards operation and relief from pain. Von Langenbeck has used this method of operating once; but the nerve was only strongly stretched, not excised. The relief from neuralgia seems to have been equally great.—*Med. Times and Gaz.*

ON THE CAUSE OF DEATH UNDER CHLOROFORM.

By G. P. HACHENBERG, Austin, Texas.

THE subject of this paper was forcibly brought to my mind in connection with my researches on the malignancy of epidemic diseases, as cholera, yellow fever, &c. The similarity of action of anæsthetics and some of the chemical and epidemic poisons on the system, led me to think that there was a common cause in their disastrous results. Take into consideration almost any active chemical poison, as arsenic, morphia, &c. A few grains may be sufficient to destroy life. But let a person take small medicinal doses of the same daily, and gradually increase them, he may finally be able to take ten times the quantity with impunity that would have proved fatal at the first dose. Here is a physiological principle involved that should solve the difficulty of our question. Let the nervous centres be *suddenly* overwhelmed with any poison, bad results will follow. An epidemic poison that is gradually admitted into the system will invariably produce a mild type of disease, where, on the other hand, if the absorbents take it up suddenly, it is sure to endanger life.

The cause of death under chloroform is not usually owing to any organic defect in the system, as it is usually supposed, but to the condition of the absorbents. If the functions of these are in a measure suspended, chloroform, if administered in the ordinary way, would hardly ever prove fatal. But let them be in a ravenous condition, with a corresponding clogged elimination, when chloroform is administered like any other poison, it is apt to prove fatal. As to the mode of dying under the influence of chloroform, that is entirely a secondary matter, and comes within the range of some constitutional defect that may exist at the time. This explains the want of pathological harmony of the fatal cases. I do not agree with Richardson, that "no human skill in applying chloroform can divest it of its danger." I believe there are two ways of accomplishing this:

1st. By administering chloroform daily, sparingly, every day for several days before its final administration.

2nd. By counteracting the activity of the absorbents.

There are circumstances when the latter is enforced by the process of nature alone, as in certain forms of injuries and in all cases of parturition. Consequently, cases under this peculiar condition are not likely to prove fatal. In my army

experience I have noticed that a healthy, vigorous subject, in a fast with great fatigue, cannot take chloroform with safety, and for obvious reasons.

The question might be asked, if chloroform is not usually received into the system by the absorbents, how is it received? Precisely as the oxygen of the air is admitted—by a limited pulmonic endosmosis, virtually a mechanical process. Instantaneously as the anæsthesia makes its impress on the brain, insensibility ensues. Should this process of endosmosis into the pulmonic capillary arteries be associated with an active absorption by the veins, the venous portion of the heart would become paralysed, thus causing death.

There is another idea connected with this matter that deserves serious attention. A self-generating poison in the system, as in smallpox, scarlatina, &c., is governed by the same law as any extraneous poison that may be received in the body.—*Pac. Med. and Surg. Jour.*

SUGGESTIONS RELATIVE TO CAUSE OF RAPID DENTAL DECAY.

By DR. C. W. SPALDING, of St. Louis.

DURING the last year I have given considerable attention to the examination of the mixed fluid of the mouth which is commonly denominated saliva. This examination has been devoted chiefly to the chemical properties of this fluid, with a view of determining how far this property of saliva is responsible for that rapid decay of the teeth which practitioners of Dentistry so often encounter.

In common, I believe, with many other practitioners, I have supposed that an acid condition of saliva prevails, or at least may usually be looked for in most cases of rapid decay of the teeth. Under this impression I entered upon a series of chemical tests with a view of endeavouring to discover the cause of this assumed chemical condition of saliva.

My observations have resulted in the formation of an opinion amounting almost to conviction, that the agency heretofore ascribed to the chemical condition of saliva in promoting decay of the teeth in healthy persons, has been largely over-estimated, if it has not been altogether erroneous.

My first experiments were made upon the saliva of a young girl (æt. 12) whose teeth were decaying rapidly, so

much so that fillings previously inserted, that is, before the case came into my hands, whether of gold or of other materials, had lasted but a short time, and in whose teeth new cavities were constantly forming, and this at so rapid a rate that cavities of considerable size would form in the space of a few months, notwithstanding pretty thorough cleanliness and good general care. I looked to find an acid reaction of the saliva in this case, and had been reflecting on a course of medical treatment, having in view the correction of this supposed condition of the saliva. What, then, was my surprise on finding, after repeated tests, that the saliva of this young person exhibited in every test either a neutral or a slightly alkaline chemical reaction! In no one of a large number of tests was there any, even the smallest acid reaction shown. I immediately sought other cases where a similar destructive process was going on, but the result in each was precisely the same as in the case just narrated. Indeed, in none was an acid condition present where the subject was in passably good health.

A professional friend also made similar tests in some very marked cases of rapid decay with the same results—no acid condition of saliva revealed.

I do not wish to be misunderstood. I am not combating the idea that an acid condition of the saliva would promote decay of the teeth. I have no doubt it would do so, but I am endeavouring to show this condition of the saliva is not usual in states of ordinarily good health while the teeth do often rapidly decay, although the general health is not perceptibly, or at least not seriously, disturbed. The view I now present is, if the general health is good or fair, and the saliva normal, or nearly so, any rapid decay of the teeth must be attributed to some other cause than acid saliva. In certain localities favouring the lodgment and retention of food, decomposition of food substances probably takes place, accompanied perhaps by the generation of acid. But many of the cavities of the class now under consideration are located at points very unfavorable to retention, and it would not be fair to assume that decay occurring at these points was occasioned by products resulting from either the partial digestion, the oxidation, or any other change in food substances.

Are there any other known methods by which acids may be generated, to whose action this rapid decay of the teeth may be fairly attributed? Let the chemists answer. If yes, the methods should be sought out and explained, that the chemical theory, as it relates to this class of cases, may be fairly presented. If, however, the chemical theory is found,

on thorough investigation, to be inadequate to the production of this class of cavities, or of any cavities under the conditions I have presented, some other cause must be invoked. Are these undetermined causes external or internal to the teeth, or both internal and external? Under the suggestion that internal forces may become important predisposing causes to decay of the teeth, our thoughts turn at once to faulty development, and to the period when calcification of the teeth is going on. The calcification of the deciduous teeth commences about the fourth or fifth month of foetal life, and that of the permanent teeth during the ninth month of foetal life, or the first month after birth. It will therefore be seen that if medicinal treatment is to be attempted, it should be commenced at an early period of foetal growth. The calcific process continues uninterruptedly until the completion of the third molars, which it is probably safe to say does not take place earlier than the fifteenth year. Yet I think we may with fairness conclude that if the deciduous teeth are perfectly developed, no medication will be required to ensure a similar condition of the permanent set.

If defective development is to be regarded as a primary predisposing cause of the early and speedy decay of the teeth, our attention should, first of all, be directed to the most effective means of correcting this evil. Evidently there is but one mode by which preventive or corrective methods can be made effectual previous to birth. It is only through the blood of the mother that ante-natal treatment can be successfully applied. But whether defective development is due to a scanty supply of nutrient material, or to a lack of assimilative or developmental force in the individual, is first to be considered, that treatment may conform to diagnosis. If to insufficient supply, would not the defect be manifest in the general osseous system? The amount of mineral salts requisite for the calcification of the teeth—or I might limit the comparison to the enamel of the teeth—is small, compared with that which is necessary to construct the entire skeleton. I may here notice the fact that bone and dentine are but imperfectly calcified at birth, and that deposition of lime salts goes on at a rather rapid rate for a considerable time after birth; and it should also be noted that the post-partum deposition of lime salts is probably slower and more difficult in enamel than it is in either bone or dentine. This latter implies the greater need for ante-natal methods of insuring the perfect formation of enamel. But to return. The relatively small amount of lime salts composing the hard elements of an entire denture would scarcely be missed if the deficiency was equally distributed

over the whole osseous system. If defective enamel is owing to an insufficiency of supply, would not the defect be general and show itself elsewhere as well as in the enamel of the teeth? I am aware that the tardy closing of the fontanelles, and the late hardening of the bones of the infant, are indications of a lack of ossific material; but these cases are exceptional, and include but a small proportion of those in which rapid decay of the teeth is a marked and prominent symptom. If this condition does not proceed from a deficiency of nutritive material, it must necessarily arise from a want of assimilative force. I am inclined to accept the latter hypothesis, and to attribute the faulty formation to what I may call defective lime function, rather than to a lack of the substance itself. If this view is correct, we are at once brought into the field of preventive medicine, a field that has been but imperfectly tilled, especially that branch which relates to medical treatment of the unborn child.—*New England Journal of Dentistry.*

MICROSCOPIC STRUCTURE OF MALLEABLE METALS.

THE following observations on the minute structure of metals which have been hammered into thin leaves are instructive. Notwithstanding the great opacity of metals, says 'Manufacturer and Builder,' it is quite possible to procure, by chemical means, metallic leaves sufficiently thin to examine beneath the microscope by transmitted light. Such an examination will show two principal types of structure, one essentially granular and the other fibrous. The granular metals, of which tin may be taken as an example, present the appearance of exceedingly minute grains, each being perfectly isolated from its neighbours by still smaller interspaces. The cohesion of such leaves is very small.

The fibrous metals, on the other hand, such as silver and gold have a very marked structure. Silver especially has the appearance of a mass of fine, elongated fibres, which are matted and interlaced in a manner which very much resembles felt. In gold, this fibrous structure, although present, is far less marked. The influence of extreme pressure upon gold and silver seems to be, therefore, to develop a definite internal structure. Gold and silver, in fact, appear to behave in some respects like plastic bodies. When forced to spread out in the direction of least resistance their mole-

cules do not move uniformly, but neighbouring molecules, having different velocities, glide over one another, causing a pronounced arrangement of particles in straight lines.—*American Journal of Dental Science.*

VACANCY.

NATIONAL DENTAL HOSPITAL, 149, Great Portland Street W.—House Surgeon. Salary £50 per annum. Applications by April 22nd.

Correspondence.

[We do not hold ourselves responsible for the opinions expressed by our Correspondents.]

DENTAL POLITICS IN SOUTH AFRICA.

To the Editor of the 'British Journal of Dental Science.'

2, New Street, Cape Town;
13th March, 1883.

SIR.—I beg to enclose you a true copy of an official reply, in answer to my letter, which I received from the Colonial Government regarding a correct list being kept of all Dentists *licensed* by the Colonial Government. The Colonial Medical Board recognise the Dental profession as being an integral part of the medical profession, and since February, 1879, have recommended the Colonial Government to grant licenses to "qualified" and registered Dentists *possessing* the Dental registration certificate or some recognised diploma.

Ten years ago (1874) I was in correspondence with the Colonial Government regarding Dental reform, and ever since I have endeavoured to uphold the status of the profession in order that Dentists might be looked upon as distinct from empirical extractors of teeth. Being resident in the metropolis, and close to the Colonial Office, I am able to watch the course of the development of the profession, and by so doing am enabled to correct any errors that creep into the list of Colonial Licensed Dentists published biannually in the 'Government Gazette,' June and January.

I hope that every Colonial licensed Dentist in this colony will send me their correct name and address before the 15th

or 30th June at latest, in order that the correct list may be made out. I am sorry to say that there are in this colony men who claim to be registered under the Dentists Act (1878), that are openly violating the principles of the Act in many ways; but the publication of the list of Colonial Dentists will gradually educate the public. In a short time all the correspondence which has taken place between myself and a registered Dentist not licensed by the Colonial Government, who has a Dental depôt on his premises, may be published, when some strange revelations will be made.

Any character might, by a Dental registration certificate, from some of the thousands who so surreptitiously got their names on the list and obtained the "Dental Registration Certificate," come out to this colony, send his address (an alias) to the Registrar, and get it put on the current 'Dentists Register.'

By showing the list of names to an outsider and seeing Cape Town or any other address on would easily mislead the uninitiated. A Dentist who after being courteously asked to apply for the license and refuses to do so, when the cost is *nothing*, is to my mind acting a suicidal part.

Of late a number of persons (some barbers) have suddenly sprung into existence as Dentists. Here being a certain Dentist who for the last year has been advertising for pupils to learn the *surgical* and other branches of the Dental profession. Yesterday a Mr. Carter called on me; he is a member of the profession and purposes practising in the colony. Any *bonâ fide* Dentist coming to this colony I shall be pleased to see and do all I can whilst they maintain the principles of the Dentists Act (1878). I am, &c.

Berks T. Hutchinson, L.D.S.R.C.S., Ire.º

[Enclosure.]

Copy.
No. 4/252.

Colonial Secretary's Office, Cape of Good Hope,
Cape Town, 1st March, 1883.

SIR,—I am directed to acknowledge the receipt of your letter of the 31st January last enclosing Gazette List of Licensed Dentists corrected up to 31st December last by yourself, and to inform you that due regard will be paid to the same in preparing the List for the half year ending 30th June next.

I have the honour to be, sir,

Your obedient servant,

HAMDEN WILLIS,

Under Colonial Secretary.

B. T. Hutchinson, Esq., L.D.S.R.C.S.
2, New Street, Cape Town.

MONTHLY REPORT OF CASES TREATED AT THE DENTAL HOSPITAL OF LONDON,

FROM MARCH 1ST TO MARCH 31ST, 1883.

Extractions	{ Children under 14	417
	{ Adults	745
	{ Under Nitrous Oxide	428
Gold Stoppings.....		194
White Foil ditto		6
Plastic ditto.....		607
Irregularities of the Teeth treated mechanically.....		146
Miscellaneous Cases.....		361
Advice Cases.....		148

Total..... 3052

W. F. CORNELIUS,
House Surgeon.

MONTHLY REPORT OF CASES TREATED AT THE NATIONAL DENTAL HOSPITAL,

FROM MARCH 1ST TO MARCH 31ST, 1883.

Number of Patients attended 1387

Extractions	{ Children under 14.....	350
	{ Adults.....	596
	{ Under Nitrous Oxide	190
Gold Stoppings		90
Other Stoppings		424
Advice and Scaling		184
Irregularities of the Teeth		155
Miscellaneous.....		253

Total 2242

CHAS. W. GLASSINGTON, M.R.C.S.,
House Surgeon pro tem.

QUARTERLY REPORT OF CASES TREATED AT THE DENTAL HOSPITAL OF EXETER,

FROM JANUARY 1ST TO MARCH 31ST, 1883.

Extractions	{ Children under 14.....	320
	{ Adults	660
	{ Under Nitrous Oxide and Ether.....	20
Stoppings	{ With Gold	21
	{ „ White Foil	12
	{ „ Plastic Material	222
Miscellaneous (Irregularities of the Teeth, Scaling, &c.).....		137

Total..... 1392

HENRY B. MASON,
Hon. Sec.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 82, Mortimer Street, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
3. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
4. All communications relative to subscriptions and advertisements are to be addressed to the Publisher, Mr. J. P. Segg, 82, Mortimer Street, Regent Street, London, W.
5. The Journal will be supplied direct from the office on PREPAYMENT of subscriptions as under:

Twelve Months (post free) 14s. 0d.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skliros, 82, Mortimer Street, Regent Street, W. A single number sent on receipt of seven (penny) stamps.

ANSWERS TO CORRESPONDENTS.

"WITHOUT PREJUDICE."—Your communication contains proper matter to bring before the B.D.A., the Medical Council, and the College concerned, but is quite inadmissible in a journal, where it would be distinctly libellous.

Communications have been received from Messrs. B. M. Moseley (Leeds), Ash & Sons (London), D. F. Cornelius (London), C. W. Glassington (London), H. B. Mason (London), Berks T. Hutchinson (Cape Town), Felix Weiss (London), "Without Prejudice."

BOOKS AND PAPERS RECEIVED.

'British Medical Journal.' 'Glasgow Medical Journal.' 'Dental Record.'
'Southern Dental Journal.' 'Le Progres Dentaire.' 'L'Art Dentaire.'
'Transactions of the Odonto-Chirurgical Society.' 'El Progreso Dental.'
'Pharmaceutical Journal.' 'Lancet.' 'Medical Times and Gazette.'

NOTICE.—We desire that it may be clearly understood that our pages are open to all for free expression of their views on matters connected with our profession. We only ask for terseness of expression and MODERATION IN TONE.

When otherwise unobjectionable, difference of political or other opinion will never be regarded by the Editor as a disqualification for the admission of any communication to the pages of the BRITISH JOURNAL OF DENTAL SCIENCE.

British Journal of Dental Science.

No. 367.

LONDON, MAY 1, 1883.

VOL. XXVI.

CYSTIC TUMOURS OF THE JAWS, AND THE ETIOLOGY OF TUMOURS.*

By F. S. EVE, F.R.C.S.,

ERASMUS WILSON LECTURER AND PATHOLOGICAL CURATOR OF THE MUSEUM OF THE COLLEGE, AND SURGICAL REGISTRAR TO ST. BARTHOLOMEW'S HOSPITAL.

(Continued from p. 358.)

LECTURE II.—ON SOME POINTS IN THE ETIOLOGY, GENERAL CHARACTERS, AND RELATIONS OF TUMOURS (*continued*).

Very few facts* can be brought forward indicating a change or transmutation in the character of a tumour in transmission. Sir J. Paget records one in which the three daughters of a lady with scirrhus of the breast suffered removal of the breast for what was probably rapidly growing adeno-sarcoma.

The following case lately fell under my own observation. A female, aged forty-six, was admitted into St. Bartholomew's Hospital with a recurrent sarcoma of the breast. The following family history was obtained from her. A grandfather died with a tumour in the throat. Her father had a tumour removed from his cheek forty years before his death; it did not recur. A brother, then aged forty-six, had a tumour removed from his cheek when six years old. Her two sisters each had a tumour of the breast. One sister had a tumour, probably a sarcoma, of the left breast, of two years' duration; she was still living, but the tumour was rapidly growing, and her health was becoming affected. In the other sister, aged forty-eight, a tumour had existed in the right breast for sixteen years, which was not growing, and she was still in excellent health; it is therefore most probable that this tumour was an adenoma.

From the instances of hereditary *multiple* exostoses, fibrous,

* Mr. Hutchinson has, I believe, cited some other cases in his unpublished lectures delivered at the Royal College of Surgeons.

fatty, and glandular tumours, and from the occurrence of transmitted cancers in different organs in individuals of the same family, the conclusion perhaps may be drawn, that a tendency to tumour-formation is sometimes diffused throughout a system of the body, such as the osseous, cutaneous, glandular, or epithelial, as the case may be; and that in cancer the morbid growth will be more likely to form in the organs most predisposed to cancer in each sex—viz., the breast and uterus in women, and the lips, tongue, or stomach in men.

A belief in the heredity of tumours does not necessarily imply an adhesion to the doctrine of their constitutional origin, premising that by the term constitutional, a disease such as gout is signified, in which an error of assimilation or elimination leads to accumulation of urate of soda in the blood and its disposition in those parts, the nutritive condition of which is most favourable for its reception. It is true that when the cancer-elements, probably the nuclei of cancer-cells, have become mingled with the blood, they may in a similar manner be deposited in different organs. But the analogy does not reach further, for, in gout, the origin of the disease is probably functional, not structural, and may be referred to a faulty action of one, or more probably a whole group of organs. Cancer and other tumours must be considered as local aberrations in the structure of the part affected. When looked at in this light, the transmissibility of cancer or tumours in general is no more surprising than that of any other structural peculiarity or disposition, such as form and feature, colour, or the still more remarkable inheritance of habits, gait, and mental disposition. Or, again, than of certain local diseases and malformations which have been shown to run in families, such as hydrocele, hernia, hare-lip, club-foot, and supernumerary digits. For we might just as well attribute the form of the nose, or the colour of the eyes or hair, to a constitutional cause as the formation of an exostosis, a fatty tumour, or even a cancer. Even if the tendency to abnormal growth be diffused throughout different parts of a whole system such as is observed in the multiple exostoses, enchondromata, or fibromata, it is still localised in the cellular elements of a certain tissue.

The arguments supporting the doctrine that cancer is the result of a constitutional diathesis, or "the local manifestation of certain specific morbid states of the blood," chiefly rested on the frequent recurrences of malignant tumours after removal, and their tendency to multiply by dissemination throughout the system. In the absence of evidence of the transmission of tumour-elements by the blood-vessels

and lymphatic vessels, it was most natural to suppose that the primary and the secondary diseases were the result of the same morbid condition of the blood. The true explanation was found by Virchow, who taught that the general dissemination of tumours was, as he termed it, a deuteropathic phenomenon, that is, secondary to the formation of the tumour itself, and "the result of the introduction into the circulation of elements derived from the existing tumour."

This doctrine was one of the chief steps towards the establishment of the local origin of tumours, which is now supported by the following facts.

1. All tumours are the prototype of the adult or embryonic condition of the tissue or organ in which they originate, or from which they are derived.

2. The secondary formations are a more or less exact imitation of the primary tumour, which could not well be the case unless some of its formative elements were directly transferred to the new locality. Further, such a transference is proved by the occurrence of tumour-emboli.

3. Malignant tumours do not invariably recur after removal.

4. There is no indication of the existence of a general nutritive disturbance known as cachexia, preceding the formation of the malignant tumours, which might be taken to indicate an abnormal condition of the blood.

5. Many distinctly localised abnormalities, such as moles, nævi, warts, &c., which are physiologically and structurally imperfect, are especially liable to tumour-formations.

6. The heredity of tumours is not at variance with the theory of their local origin.

A belief in the local origin of tumours has led to many attempts to explain their formation by accidental causes acting locally, such as injury and inflammation, or irritation.

Statistics collected by Tanchou, Marc d'Espine, and Virchow himself, showing the greater frequency of cancer in the stomach, rectum, uterus, and in certain special parts of these organs, led to the foundation of the theory of irritation by Virchow. He observes "that all the organs covered with a soft surface, which are frequently in contact with foreign bodies, develop tumours more often than those which are enclosed in the interior of cavities." And he continues: "if one goes further, that the malady affects precisely most often those points which are the most exposed by their situation to bruising and irritation, such as the lips, œsophagus, orifices of the stomach, rectum, and os uteri."

An injury, irritation, or inflammation, is not rarely the precursor of the manifestation of a cancer, and therefore any attempt to explain the origin of malignant tumours must

also account for the manner in which these act as exciting causes. Of all the tumours, the epitheliomata most commonly originate in connection with some form of irritation. Among thirty-four persons affected with epithelioma, Sir James Paget found that nineteen were aware of an injury or a previous morbid condition of the part. A similar history, though in a lesser proportion, is also obtainable from the subjects of other forms of tumour. The statistics of F. Boll,* taken from 344 cases of cancer operated on in Langenbeck's clinic, show that in 42—viz. 12 per cent.—a traumatic cause preceded their formation. Oldekop found, among 250 cases of cancer of the breast in Esmarch's clinic, that in 18 only a history of injury was given; in 4 cases the cancer-formation immediately followed the injury; but in 36 cases the patient had been affected with inflammation of the breast. Calculating the percentage from 103 patients who had borne children, and were thus in a position to have acquired puerperal mastitis, he found that 34·9 per cent. of women with cancer of the breast had been affected with inflammation of the breast at some time previously.† It is true that the largest percentage from these last statistics still show a greatly preponderating proportion of cases in which no such exciting cause existed. For example, in Boll's statistics, these amount to 88 per cent. Any doubt, however, that may arise as to the influence of inflammation and irritation as occasional exciting causes of cancer, especially epithelioma, must be at once dispelled when particular instances are called to mind.

Soot or chimney-sweepers' cancer is the most familiar example; it is said to be much less common now than formerly when boys were made to climb the chimneys. The loose and folded character of the skin of the scrotum, offering a surface to which the soot readily clings, and its liability to friction against garments, render this part the almost exclusive seat of the disease; but it also occurs on other parts of the body, for instance, the skin of the neck, or the back of the hand, as in the case of a gardener, related by Sir James Earle.‡

Epithelioma of the scrotum has also been observed in stokers and other mechanics whose skin becomes begrimed with coal-dust. Soot or coal has, however, no specific action, for I have seen an instance of the disease in a mason. The

* 'Die Princip. der Wachsthum,' Berlin, 1876.

† This proportion is probably somewhat too high, for it was not in all cases stated which breast had been inflamed. In Von Winiwarter's cases the number was lower, viz. 20 per cent.

‡ Pott's 'Works,' ed. by Earle, vol. iii, p. 183, 1808.

first effect of the irritation is shown by the appearance of a crop of warts, which do not differ from ordinary papillary growths. After existing sometimes for a long period, they become ulcerated, and then rapidly assume the characters of epithelioma.

Again, the great frequency of epithelioma of the lip and tongue in males has been generally ascribed to the prevalent habit among the lower orders of smoking short unwaxed clay pipes. Mr. Hutchinson* found that in 110 cases of epithelioma of the lower lip occurring in hospital patients, 105 were males, and four were females; of the females two had contracted the habit of smoking. That the constant use of a clay-pipe is capable of producing an appreciable tissue-change is shown in the lower lips of inveterate smokers of clay-pipes, where a whitish smooth patch, a slight callosity, or even a groove from atrophy, may be observed at a point shown to be that on which the pipe rested by the corresponding worn teeth.

Epitheliomata of the lower lip is also met with in those much exposed to the weather,† and a history of long-continued and often repeated cracking of the part, from the moisture of the saliva can usually be obtained; this is sometimes followed by the formation of a small wart, subsequently developing into epithelioma.

An epithelioma of the tongue is very commonly attributed by patients to the irritation of jagged teeth.

Epithelioma of the glans penis is almost invariably associated with congenital phimosis, and consequent irritation from retention of decomposed secretion.

An ordinary corn on the foot, or a callosity on the tongue, may, after existing some years, become warty and develop epithelioma.

The long continued chronic inflammatory processes affecting the mucous membrane of the tongue very frequently give rise to epithelioma. The condition known as smooth tongue commonly results in epithelioma; this affection is distinctly of a chronic inflammatory nature, and has been often attributed to excessive smoking and syphilis. Again, ichthyosis of the tongue possesses a similar and even stronger liability; for among fifty-four cases of ichthyosis collected by Dr. Sangster,‡ “30 per cent. eventuated in epithelioma after an

* “The Local Origin of Cancer,” ‘Medical Times and Gazette,’ 1881, p. 92.

† This has been also observed by Von Winiwarter, who gives tables showing the very large proportion of persons affected with cancer of the lower lip, who either worked in the open air or lived in the country; he estimates them as over 71 per cent.

‡ ‘Trans. Path. Soc.,’ vol. xxxiii, p. 107.

average duration, in eight cases, of twenty-three years;” and of forty-three cases of cancer of the tongue tabulated by von Winiwarter, “psoriasis had preexisted in at least ten.”*

A simple ulceration of long-standing may give rise to epithelioma; and Mr. Hutchinson has drawn attention to the fact that syphilitic ulcers of the tongue may become insensibly epitheliomatous, if allowed to remain unhealed.

Other instances of cancer following chronic inflammation are met with in the glandular organs and mucous membranes, such as the so-called eczema of the nipple, the association of which with cancer of the breast was pointed out by Sir James Paget,† who has also observed that chronic indurations of the breast sometimes become cancerous.

The statistics already quoted show that inflammation of the mamma is a common precursor of cancer. In rare cases the irritation of calculi in the gall-bladder, kidney, and urinary bladder‡ may apparently excite the formation of a cancer.

Similar instances of tumour formation, in connection with an injury or chronic inflammation, are observed among the sarcomata, especially of the bones. A slight injury to a bone is occasionally followed by a rapidly growing sarcoma, sometimes exhibiting the heat and redness of inflammation; to these cases attention has recently been drawn, under the name of traumatic malignancy. And in most museums specimens of sarcomata of bones may be found, which have developed after a fracture or a blow; cases of tumour formation in callus also have been recorded.§

Chronic inflammatory, and also some atrophic processes in bones, resembling mollities ossium, are occasionally associated with sarcoma.||

Let us now turn to the microscopic appearances observed in cases of cancer, preceded by a chronic inflammatory, or “irritative” process as it has been called. These show that the antecedent process is of a chronic inflammatory nature, and that the resulting hyperplasia passes insensibly into the tumour-formation.

A general thickening of the skin of the scrotum, and even of the perinæum, may be observed in cases of chimney-sweepers’ cancer; this is produced by thickening of the epithelium, and a slight indipping of its interpapillary processes

* Op. cit., p. 207.

† ‘St. Bartholomew’s Hosp. Rep.,’ vol. x, 1874.

‡ See ‘Trans. Path. Soc.,’ vol. xxxii, p. 139.

§ See Lücke (Op. cit., p. 62), and ‘Cat. St. Bart. Hosp. Museum,’ No. 2454.

|| See H. T. Butlin (op. cit., p. 106).

into the corium, which is infiltrated with leucocytes. The changes in the earlier stages of ichthyosis of the tongue are also indicative of an inflammatory hypertrophy, consisting in a thickening of the superficial epithelium, and a slight elongation of the interpapillary processes, with infiltration of the submucous connective tissue, with abundance of leucocytes or indifferent cells. Such a slight hypertrophic ingrowth of epithelium, gradually increasing, leads to the formation of club-shaped or irregular processes of epithelium, dipping deeply into the submucous tissue, and containing "cell-nests." In both of these cases a direct transition is observed, from the simple inflammatory hypertrophy of epithelium to the widely extending ingrowth constituting epithelioma; and it is quite impossible to say where the inflammatory process ends and the malignant disease commences, the latter being apparently the direct outcome of the former.

When the ingrowth of epithelium in these cases has attained a considerable extent, the epithelial cells undergo certain characteristic changes; they become enlarged, irregular in shape from mutual pressure, sometimes multinucleated, and numerous cell-nests make their appearance; the small cell-infiltration of the connective tissue increases, and the normal distinct boundary line between the epithelium and the subjacent tissue becomes blurred, the apices of the ingrowing epithelial columns gradually fading into the small cell-infiltration.

The changes in mammæ, affected with eczema of the nipple, are somewhat analogous to those observed in ichthyosis of the tongue. The superficial intractable ulceration of the nipple is, in the majority of cases, evidently inflammatory; and it is accompanied, as Mr. Butlin found, by a proliferation of the epithelium of the ducts, and infiltration of the tissue in their vicinity with in different cells. This proliferation of the cells lining the galactophorous ducts may probably be considered in some measure analogous to the overgrowth of superficial epithelium in ichthyosis. The subsequent changes also similar, consisting in the projection of buds of epithelium from the walls of the ducts into the surrounding infiltrated connective tissue; these buds grow into tortuous columns, which constitute the cancerous new formation.

The formation of the cancer in these cases may perhaps be largely ascribed to the long continued nature of the irritative process, for it may be supposed that infinitely numerous successive generations of cells, formed under altered conditions as regards nutrition from excess of blood supply, might gradually become changed in their nature, and endowed with

a more active power of growth, together with the capacity of living in the connective tissues. It must also be remembered that the small cells, infiltrating the subjacent tissues, are identical with granulation-cells, and thus a granulation-tissue may be said to exist into which the epithelial cells grow. For an instance of the capability of epithelial cells to grow in granulation-tissue, I have only to refer you to skin grafting. The important fact, however, must not be lost sight of, that cancers following some inflammatory or hypertrophic process, offer no exception to the general rule in the age at which they occur; although the antecedent disease may have existed many years.

In the formation of tumours in connection with some irritation or inflammation, so many factors exist regarding the nature of which little is known, that it is only possible to speak in the most general terms of the part they severally take in the production of a tumour. Probably an abnormal constitution of, or tendency in, the tissues of the part exists in all cases; it manifests itself in the formation of a papilloma or in the occurrence of an inflammatory hypertrophy such as ichthyosis from slight exciting causes; or in the persistence of a chronic inflammatory process, such as eczema of the nipple or smooth tongue, the exciting cause of which is equally disproportionate to the result. And the tendency to tumour-formation in imperfectly formed parts is obvious in cases of nævi, angiomata, moles, congenital warts, and in parts affected with congenital hypertrophy.

In proportion as the abnormal tendency is slighter will the exciting cause be more apparent; and in all cases the increased blood-supply resulting from the inflammation or irritation doubtless plays a most important part. The different manner in which the tissues of individuals react to irritations is well illustrated by Otto Weber.* He relates the case of a post-mortem room porter, whose hands were covered with warts and wherever he pricked himself in handling the corpses a fresh wart appeared; in another man, the same irritation led to the formation of numerous ulcers. A predisposition is even observed in the formation of the fibrous tumours in the lobules of the ears from the irritation of ear-rings, for they are usually symmetrical,† and have been observed in individuals of the same family.

The tendency to overgrowth of epithelium presumed to exist in the cases under consideration, and excited by increased blood supply, may be roughly compared to the latent properties of the cells forming the adventitious buds

* 'Chirurg. Erfahrungen und Untersuch.,' p. 285.

† See 'Cat. St. Bart. Hosp. Museum,' Nos. 3264 to 3266.

in plants. These buds may be produced from any part of the cambium layer, no trace or rudiment of them having previously existed. After injuries to branches, new buds grow immediately below the severed extremity, their formation being probably due to an increased supply of sap to that part; and pollarded willows become immediately covered with buds. Irritation from parasites may also cause the formation of hundreds of buds. The analogy between the adventitious buds of plants and the growth of epitheliomata is rendered more striking by the fact, to which Sir James Paget* called our attention, that the tumours of plants are buds, which have become displaced inwards instead of growing outwards into shoots. In precisely the same manner, the epitheliomata are produced by epithelial cells, which have grown inwards, instead of being pushed outwards, and developing, on the squamous epithelial surfaces, into a protective covering of laminated cells. The comparison may be carried still further. The cells of the cambium layer of plants doubtless possesses a latent tendency to growth and higher differentiation, exhibiting itself, however, only on the application of a stimulus. In the same manner, the cells of an individual predisposed to cancer may be inferred to retain a latent tendency to growth above those of an individual not in the same manner susceptible, yet, as in the cambium layer of plants there may be no morphological differences. The same comparison will hold good for other varieties of tumours.

SOME VARIETIES OF ALVEOLAR ABSCESS AND THEIR ATTENDANT CIRCUMSTANCES;

AND

THE TREATMENT OF DISEASED AND EXPOSED NERVE PULPS BY THE USE OF ARSENIC.†

By W. B. PATERSON, M.R.C.S.

(Concluded from page 366.)

The last case of alveolar abscess that I propose to describe to you is interesting and somewhat novel, inasmuch as the peculiar circumstances attending it have not been brought about by the inflammatory process, but accidentally by the employment of strong carbolic acid in its treatment.

The case is that of a young woman, aged 23, a patient at

* 'Elemental Pathology,' p. 31.

† Read before the Students' Society of the Dental Hospital of London, March 9th, 1883.

the Hospital under the care of Mr. Crank. She had an alveolar abscess in connection with the right lower second molar, which had opened into the mouth on the outside of the alveolar process. It was about the size of a large hazel nut. The tooth contained a large carious cavity on its crown which communicated with the pulp chamber. Mr. Crank excavated the carious dentine, removed the remains of the dead pulp in the chamber and root canals; and adopted a common mode of treatment for such cases, when it is intended to retain and eventually fill the tooth. He pumped carbolic acid of a strength about one in three, through the root canals into the abscess sac, with a bristle and cotton wool, until the margins of the fistulous opening were bleached by its action. About an hour after this was done the patient perceived a numbness about the chin and lower lip on the right side. This continued and when she came to the hospital again I saw her with Mr. Crank. I found that complete anæsthesia existed in the parts supplied by the mental nerve on the right side of the face, and also in the gums and teeth in front of the second lower molar. Owing to this loss of sensation the patient had unknowingly bitten the right side of the lower lip and made it slightly raw. In the lower lip and chin complete anæsthesia existed between the median line, corresponding to the symphysis, and a line opposite to the first bicuspid; behind this latter line, sensation gradually became apparent as a sharp pointed instrument was drawn backwards towards the angle of the jaw. At the symphysis complete anæsthesia of the parts on the right and perfect sensation in those on the left side of it prevailed. The gums from the symphysis also to the second lower molar were insensible to pricks, heat, or cold. The anæsthesia in them was complete until within half an inch of this tooth, and here it was partial, behind the molar they were normally sensitive. The teeth, on this side, in front of the molar were insensible to tapping, heat, or cold. It is now more than a fortnight ago since the anæsthesia was first noticed and up till yesterday, March 5th, when I again examined the case, no return of sensation in the slightest degree was made out. The explanation of this uncommon occurrence appears to me to be this: that owing to the close proximity of the inferior dental canal to the roots of the lower molar teeth, an abscess forming in connection with them is apt to include this canal, and by the removal of the bony substance lay bare its contents in the cavity thus produced; then as a result of using strong carbolic acid to the tooth and abscess sac the sheath of, and the inferior dental nerve itself have been destroyed by its action wherever

it happened to come in contact with them. This being so, it is readily intelligible how the portion of the nerve anterior to the lesion should become as a consequence paralysed in all the parts supplied by it.

Now with regard to the prognosis in this case. We know that when nerves are divided, whether by accident or intentionally by the surgeon, their ends will unite and in course of time impulses and impressions will be again transmitted and conveyed through them as before; and this in many instances is so also, even when considerable portions of such nerves have been completely excised, as for example half an inch or more, in operations for the relief of severe and distressing neuralgia; consequently it might be inferred that the part or portion of the inferior dental nerve which has been destroyed in the present case is very likely to be reformed, in the ensuing process of repair, and the peripheral portion of the nerve becoming regenerated, its normal sensory functions will once again be established. To show further that such a prognosis as has been mentioned is likely to be true, I quote a case of alveolar abscess connected with a lower molar that was under the care of Mr. Claude Rogers who informs me that he treated it with strong carbolic acid, the result being paralysis of the parts supplied by the nerve in front of this tooth and abscess sac. His patient in course of time, however, completely regained sensation.

I think this case is an interesting and instructive one. The lesson that we might draw from it would surely teach us that the use of strong escharotic applications, such as carbolic acid, to abscess cavities connected with lower molar teeth is liable to be followed by very unpleasant results sometimes as solutions of carbolic acid of 1 in 20 or 30 strength are, I believe, quite sufficient to effect the purpose required in these cases. At the same time it should be remembered that we possess a very potent and excellent antiseptic in eucalyptus oil, and which from the fact of its possessing no escharotic and irritant properties is eminently suited for the treatment of alveolar abscess connected with lower teeth.

The next subject of my paper is the treatment of diseased and exposed nerve pulps by the use of arsenic.

Of all the agents that we have in use for the purpose of destroying a living pulp arsenious acid is the quickest, and at the same time, the most efficacious. Whether it be employed in the form of a paste or powder it matters but little, provided that a sufficient quantity be properly applied to an exposed living pulp, its complete death and destruction will generally be effected in the course of twelve hours, or even sooner in many cases. The action of this drug is that of a

very powerful escharotic and strong antiseptic. Of this latter property, I shall endeavour to illustrate its usefulness in connection with the filling of teeth by bringing before your notice the results achieved by the drug in the small number of cases that I have treated with it at present. In using arsenic for dental purposes there are two or three points that it is necessary I should remind you of, and firstly, as to the amount of it that is required to be used to destroy a living pulp, it may be said that $\frac{1}{30}$ th of a grain of arsenious acid is quite sufficient when directly applied to it to effect this purpose. It must also be borne in mind that arsenic need not be applied directly to a pulp in order to kill it; for it will do this if placed on the dentine at some little distance from it, so great is the penetrating and destroying power of the drug. The pain that some patients experience after the local application of arsenic to the pulp is I believe mainly due to the opening in its chamber being too small; as a result of this the irritation and inflammation set up in the pulp by the arsenic, causes it to swell and then from the fact of its being enclosed within hard and unyielding walls, pressure gives rise to the pain. If the aperture be sufficiently large, the arsenic has greater access to the pulp, and therefore its escharotic property can be more quickly brought to bear; at the same time room is given for the swelling of the pulp that is likely to occur in the early stage of the acute inflammation so induced. Whenever arsenic is to be applied to a tooth pulp the rubber dam ought, if possible, to be previously adjusted, for there is a liability of the arsenic getting down between the gum and the tooth; the consequences of which may prove somewhat disastrous; the tooth and socket becoming necrosed on account of the destruction of the periodontal membrane. The gums have been known to undergo sloughing through arsenic being allowed to remain and act upon them whilst the operation on the tooth is being proceeded with. The supposed danger of poisoning the patient can be put altogether on one side when such small quantities of arsenious acid as $\frac{1}{30}$ th of a grain are used, for if such a dose were swallowed no harm whatever would result. There are some distinct contra-indications to the use of arsenic that should also be recollected. It should never be employed in the teeth of young subjects where the fangs are not fully developed. Nor should it be used in teeth with large apical foramina. And in cases where abscesses have connection with them; lest sloughing and necrosis should ensue as direct consequences of the arsenic escaping easily through the ends of the fangs and acting on the surrounding tissues.

Mr. Alfred Coleman has used arsenic in the treatment of diseased and disintegrated nerve pulps with a great amount of success; and in the 'Odontological Society's Transactions' for 1875-6 is a very short paper by him on the subject. Since he first drew attention to its great utility in certain cases, in that paper, he has occasionally published I believe the results of this kind of treatment and they have been of a most satisfactory character. The cases in which it is recommended that arsenical dressing should be used are dead teeth with canals containing nerve structures in a state of putrefaction, and the dentinal walls surrounding them in a softened and carious condition. A reason that may be given for the adoption of this method of procedure in preference to the usual manner of dressing such teeth with carbolic acid, eucalyptus oil, etc., is when the patient with such teeth finds himself or herself, as the case may be, unable to pay more than one visit to the dental surgeon, and yet requires to have permanent fillings put in at once. The treatment of a dead tooth in this condition is as follows: having shaped and excavated the cavity, the remains of the pulp in the nerve-canal are cleared out as well as is possible; a small twist of cotton-wool covered with a little arsenical paste is then introduced up the canal on the end of a bristle; or a cap made of thin address card is coated with the paste and placed over the root-canal. Over the arsenical dressing an osteo, amalgam, or a combination of both, or an osteo and gold filling is placed, and the operation is concluded. I have the notes of some ten cases in which I have followed out this line of treatment; and although the dressings have been in for periods varying between three months and two years nearly, no abscesses or any other ill effects have been produced. The teeth have remained firm and perfectly comfortable. I may mention here that Mr. Coleman has found many of his patients' teeth treated in this way, free from all discomfort, and useful masticatory members, at the end of much longer periods, such as 6, 7, 10, or more years.

If such satisfactory results to this method of treatment prove to be the general rule, it will be perfectly apparent to us all that in arsenic we have an agent of the greatest service in dental operations where celerity of dispatch is demanded in the large number of cases of the kind that I have mentioned. As a sufficient number of the results of these cases cannot be obtained at present, and brought before your notice, which will decide this question; it remains for us to prove its accuracy by carefully noting down and collecting the cases where the arsenical treatment has been adopted, as they pass through our hands.

Another fact about arsenical treatment of diseased and exposed nerve pulps that I wish to draw your attention to, relates to the duration of time that a dressing of this substance may be allowed to remain in a tooth when it has been used for the purpose of killing the pulp tissue. It is stated in some of our text-books on Dental Surgery that arsenic should never be left in a tooth for a longer period than a day or two, lest the peridental membrane should take on inflammatory action on account of the arsenious acid permeating the dentine, so reaching and affecting it. On this point I should like to submit to your consideration briefly, the notes of some cases in which I have observed arsenic to remain in teeth, after it has killed the pulp, for a much longer time than has been stated, without producing any ill effects. The mode of treatment in these cases has been to apply arsenical paste on a cap to the exposed and diseased pulp and to retain it in position by an osteo filling.

Emma H., æt. 25. Right upper canine treated in this way. At the end of three months when the osteo was removed, the pulp was found blackish brown, shreddy, and slightly moist. The tooth was, and has been comfortable and firm; and the gums around it were healthy in appearance.

Mary C., æt. 18. Right first lower molar similarly treated. Tooth firm and comfortable at the end of three months when the filling was removed. The gums also healthy.

Alice A., æt. 17. Right first lower bicuspid. Arsenic remained in for six months. At the end of that time the tooth was found firm with healthy gums around.

Fred. McC., æt. 30. Left upper second bicuspid. Arsenic allowed to remain in the tooth for over ten months. When the osteo was taken out the blackish, shreddy and shrivelled up remains of the pulp were seen. The tooth was firm and the gums were healthy.

Wm. W., æt. 20. Right lower molar. Arsenic remained in for a year. The tooth was firm, and the gums were normal in appearance at the end of that time.

H. L., æt. 25. Left first upper bicuspid. Arsenic remained in the tooth for nearly a year. At the end of that time the tooth was quite firm. It was discoloured slightly, but I forgot to note whether it was so when the arsenic was put in. The gums were healthy.

I have notes of three other cases in which arsenic was used to destroy diseased and exposed nerve pulps and which had been allowed to remain in the teeth for periods varying between a month and two months. The results of these cases show that no periosteal or peridental trouble had arisen in any one of them. I have seen several cases in which the

arsenic has remained in a tooth for two or three weeks without producing any ill results. From these cases then, gentlemen, you will observe that no inflammation and abscess occurred in connection with any tooth that had been treated with arsenic. Hence I take it we may conclude that the mischief that is likely to follow the application of this drug to an exposed and diseased nerve pulp, for a longer duration of time than two or three days, is somewhat exaggerated. I do not dispute for a moment that it has been observed to occur. I only desire to point out that in the small number of cases I have seen, the signs and symptoms of it have not developed themselves. The action of arsenic in these cases is best explained as being of a very powerful antiseptic nature. The great difference in the effects produced by its action from those by the various other antiseptic drugs employed in the treatment of diseased nerve pulps must be sufficiently apparent when a comparison is made between it and carbolic acid, for example: with the latter in contact with a decomposing pulp and securely sealed up in the tooth, the formation of an alveolar abscess could be confidently looked forward to; but with arsenic such a result is not what might be expected after a consideration of its action in the cases previously mentioned. To what extent, if any, abscess follows the arsenical treatment is a matter that requires a very careful investigation. With these remarks on the subjects of my paper I shall now conclude; and in doing so I must ask your kind indulgence for any shortcomings that may be apparent to you in the diction of my paper; for owing to our meeting being suddenly convened for an earlier date than is usual, I have been somewhat hard pressed to arrange my notes into the form of a paper that might prove interesting to the members of this Society. I thank you, gentlemen, for the attention with which you have listened to it, and I take this opportunity of remarking that in an institution like the Dental Hospital, where such ample material, in the way of cases is provided, and where so much useful and practical teaching is disseminated among us; we should make careful notes of the various interesting dental cases and operations that we are constantly dealing with here so that from a large collection of accurate statistics reliable conclusions might be drawn.

At the conclusion of the paper an interesting discussion on it took place, in which the following gentlemen joined: the President, Messrs Newland Pedley, M.R.C.S., L.D.S., W. Hern, M.R.C.S., L.D.S., M. Davis, L.D.S., C. Robbins, L.D.S., A. M. Fox, H. Baldwin, G. Hooper, R. W. Stainer, S. Mundell, and J. Petherbridge.

AN ADDRESS ON DENTAL LITERATURE.*

By OAKLEY COLES, L.D.S.R.C.S.

(Continued from page 213.)

THE work of the 19th century began in this country with the appearance of Fox's book "On the Natural History of the Teeth." This was an important production in its day, and by far the most complete work that had been issued in this country by a Dentist.

Immediately following, we had the writings of Fuller, Bew of Brighton, Parmley of London, and Murphy of Leeds, on "Projecting chin," from whose work I may read the following extract as a sample of the rest; he speaks of "the epulis, or gum-boil," and further says Indian poets especially admired white teeth. Thus Gitagovinda says, "Speak but one mild word, and the rays of thy sparkling teeth will dispel the gloom of my fears." Speaking of an antral suppuration, he writes: "All these painful effects proceeding from the inflammation have been occasioned by worms in the maxillary sinuses. The presence of worms in these cavities is accounted for by supposing the ova of an insect to have been deposited in the nostril, or to have been drawn with the breath into the nose and passing into the antrum by the duct leading from thence to the nose. These loathsome and painful guests are expelled by piercing the antrum as in cases of abscess, and in order to exterminate them entirely the parts should be injected with oil or fluids prepared for their destruction."

Hutchinson, Andrew Clark, Gerbeaux, and Sigmond of Bath, complete the list of English writers of importance in the first quarter of this century.

In France, however, we had far more valuable work produced, and the labours of Laforgue, Duval, Baumes, Serrer, Delabarre, Audibrant, Lemaire, Oudet, Rousseau, and Cuvier, made a very definite impression on the scientific progress of Dentistry. So far as I am aware, but little work of importance was accomplished in Germany during this time (though there were many publications) with the exception of Prochaska's book in 1800, Hirsch's work published in Jena, in 1801, and Serre's volume of 564 pages, brought out in Berlin in 1803.

* Read at the Annual Meeting of the British Dental Association at Liverpool.

Nor had we any help from the United States during this time, unless we notice the first Dental work published in America, by E. Sidney, at Utica, New York State, in 1824.

The best German work did not begin (as evidenced by its literature that is) till about 1820 or 1825. It is worth while noticing this point more fully. We have seen that the first Dental work was Greek, then Egyptian, next Italian, then Arabian, and afterwards French, and following this we have the German, English, and American.

In the latter part of the last century and beginning of this, when we had so many works on Dentistry appearing in France, the French language was the one spoken in the German Courts, and it was in a great measure the language of European literature, apart, of course, from Latin and English publications.

But the work of Lessing, the German critic and dramatist, during the 18th century, had prepared the German mind for the creation of a national literature, and the advent of Schiller, Goethe, Körner, Klopstock, the Humbolts, Kant, Richter, and others came as a revelation to the German-speaking nations. But more influential on German scientific work than anything else was the French Revolution.

From 1825 to 1850, and on to the present we have been learning to trust more and more to the labours of the Teutonic race, and in the second quarter of the present century, that is up to 1850, we find direct evidence of its influence upon our own Dental literature.

During this time we had in England the works of Bell, Koecker, Snell, Robertson, Saunders, Goodsir, Nasmyth, Owen, Ashburner, Robinson, Bate, and Tomes. These are names that are as familiar as household words to most of us.

In France during the same period we had the publications of Maury, Blandin, Flourens, Dèsirabode, Ripault, and Rogers. The last was, I imagine, an Englishman settled in Paris, and he was the first, I think, to bring out in 1845 a Dental Encyclopedia, and in 1847 a Dental Dictionary.

But in Germany, and notably in Sweden, most valuable contributions were being made to our literature by Otto, Raschkow, Retzius, Carabelli, Linderer, Glaswald, Adelmann, Ficinus, and Czermak.

Of these the works of Retzius are of exceeding interest and were brought under the notice of English readers by Nasmyth's excellently annotated translation in 1839. Nor must mention be omitted of the labours of Müller and Purkinje during this time.

But America now begins to share in the work of Dental literature, and as a first-fruit we have an excellent system of

Dental surgery brought out in 1829, by Dr. S. S. Fitch, who then lived in Walnut Street, Philadelphia, preceded by a smaller work by the same author, on 'The Importance of the Teeth,' published in 1828.

In the year 1833 there appeared a production that is still, and may, I trust, for ever remain unique. It is a system of Dentistry in verse; its title is 'Dentalogia,' and its author was Solyman Brown.

I am told that it is very amusing—it is certainly very curious, but life seems too short to acquire the education that is necessary in order to see the fun of this product of Solyman Brown's "divine afflatus." They say "Poets are born, not made;" that is satisfactory, as it places the production beyond human control. It would be a sad sight to have a Solyman Brown coming in with each generation of authors. Curiously enough, this poem was reprinted in 1839, in the 'American Journal of Dental Science,' but then S. Brown was one of the staff.

Meanwhile very different work was being done by Dr. Chapin A. Harris, of Baltimore, who may well be regarded as the true founder of Dental literature in America. In 1841, this distinguished man brought out 'The Principles and Practice of Dentistry,' and for forty years it has maintained its position as a text-book for students in all parts of the world.

I am sorry I cannot fix the date of the appearance of his 'Dictionary of Dental Science.' My own copy is a second edition, published in 1854. It must, therefore, I think, have appeared subsequently to Rogers's 'French Dental Dictionary' of 1847, but of this I cannot be certain. Harris's Dictionary is still a standard word, and priority of publication is a matter of but small importance. Goddard, in 1843, brought out his 'Anatomy, Physiology, and Pathology of the Teeth,' and Becker a work on 'Dentition' in 1848. Spooner's 'Guide to Sound Teeth,' published in 1836, was not a book of any importance.

The quarter of a century that we have now to consider (1850 to 1875), forming, with the previous one, the middle half of the century, is the "golden age" of our literary history.

In 1859, Tomes' 'System of Dental Surgery' appeared followed by Owen on the 'Skeleton and the Teeth,' Hulme on 'Dental Pathology,' Smith's 'Handbook of Dental Anatomy,' Salter's collected works in the volume of 'Dental Pathology and Surgery,' and a second edition of the 'Dental Surgery,' edited by Charles Tomes in 1873. Whilst in Germany we were reaping the fruits of laborious

researches that had been going on for many years, and our literature was being enriched in the most remarkable way by Czermak, Neumann, Siebold, Kölliker, Giebel, Brück, Boll, Hertz, Drury, Wedl, Hoppe, Waldeyer, Muhlreiter, Hertwig, Harting, Herdner, Mitscherlich, Lent, Van Boas, and Frey.

France was also actively engaged in Dental work, and gave us the observations of Giralaldi, Talma, Oudet, Forget, Robin, Magitot, Rottenstein, Broca, Legros, and Maurel.

The contributions of our American brethren during this time were also of great practical value, and Robertson, Piggott, Bond, Arthur, Taft, Garretson, and Richardson swell the list of our books with important works.

If you have born in mind the number of authors that I have referred to between 1825 and 1875—that is, during half a century—you will realise to some extent the large amount of good work that must have been done. Much of it was scattered about in German and French periodical literature, whilst another part was to be found only in the pages of our various Societies' Transactions. Each man had been working a relatively new field in a perfectly independent manner, and the result was an enormous mass of knowledge and learning inaccessible to the majority of the profession.

All scientific and literary effort, before it can be brought to a successful and useful issue, must be controlled by two distinct mental faculties—analysis and synthesis. The one pulls every part of a machine, structure, or sentiment to pieces, and the other put the parts properly together again. The exercise of the one faculty alone, analysis, may produce a literary Autolycus, the exercise of the other will produce at least a master of his subject, and perchance the founder of a philosophic school of thought.

About a hundred years after the appearance of Fauchard's Manual, the materials for the scientific study of Dental Surgery had accumulated to such an extent as to make it necessary to submit them to the synthetic process. Men had been and indeed were still, pulling every part of the tooth and the adjacent structures to pieces, and exercising in the highest degree their power of analysis. Scarcely any two men agreed as to what they saw, or if they arrived at such a stage as that they differed as to the interpretation to be given to what they observed. There was no one in the Dental profession, in England at least, possessed of that rare synthetic faculty, that could re-arrange and harmonise so much that seemed contradictory, that could nicely balance the weight to be allowed to evidence and the value to be given

to inference, and then assign to each their proper position. There was no one, I say, to do this work, till in 1839 there appeared upon the scene of our professional drama a young undergraduate of the London University, who in a few years should be recognised as a true philosopher in science, and become known to a younger generation as the author of *Tomes' Dental Surgery*. Any one looking at that book carefully, with any knowledge of the antecedents of its publication will see that it is a marvellous product of sound original investigation, accurate record, and unprejudiced, nay, almost judicial balance of judgment between the known and the assumable. It is not a readable book, it is too full of information for that, but to the earnest student of any time of life it is a very storehouse of knowledge, and there seems to me no higher praise to be given to the second issue, edited by the son of such a father, than to note that with equal skill the original plan is merely elaborated and not superseded.

From 1875 to the present time we have not been idle, but as we now come to a period in which I must appear as a contributor to our bookshelves, if not to our knowledge, it will not be necessary, nor even desirable that I should offer any opinion upon the works of those who are my compeers. I may, at least, however, be allowed to mention their names and thus complete this section of our literature.

In England then we have had—Sewill's '*Anatomy and Surgery*,' Stocken's '*Materia Medica*,' Hunter's '*Dental Mechanics*,' Weiss's '*Notes from a Dentist's Case Book*,' Hill's '*Reform in the Dental Profession*,' Charles Tomes' '*Dental Anatomy*,' Balkwill's '*Mechanical Dentistry*,' Coleman's '*Dental Surgery*,' Underwood's '*Surgery for Dental Students*,' the charming addresses delivered before the International Medical Congress and British Medical Association, by Edwin Saunders, and lastly, some books by myself.

In Germany there have appeared, during the same period, the works of Baume, Gegenbauer, Hollaender, Sternfeld, Neumann, and Arkövy. And in France—Maurel, Lambert, David, Cruet and Magitôt have kept up the national scientific reputation in our own department.

America has provided us with new editions of standard works, and one new book, Kingsley's '*Oral Deformities*.'

Numbers do not afford the best estimate of work, but it may be interesting before leaving this part of our subject to give some particulars as to the numerical strength of our international library. Doubtless you will be surprised to hear that the total number of books worth reckoning does not exceed 529. Of these, England provides 113, France, Italy and Belgium, 158, Germany, 226, and America, 32.

Each nationality is stamped clearly upon its literature, thus we have as prominent qualities of the different works:—Inventiveness and speculative investigation from France. Laborious and accurate research from Germany. Practical utility and manipulative ingenuity from America, and in England a combination of the whole.

It is a well-known rule of political economy that the prosperity of a nation depends not upon the wealth it possesses, but upon the wealth that it circulates, and such a formula holds equally good with regard to the literature of a profession. Its usefulness (otherwise its prosperity) depends not upon the learning carefully hoarded up in dusty book-cases, but upon the knowledge that is constantly in circulation through the medium of periodical literature.

It is very easy to complain of our journals not being what they should be, and having nothing in them, but is it perfectly certain that we know what we desire? The clear statement or conception of a definite want is, of course, the first and generally the most important step towards its supply, but no condition is so hopeless or depressing as that in which we feel discontent without knowing how to express our wants. Shall we not do well therefore to specify as briefly as possible what we look for in our own periodical literature. Beginning with the items of least importance, we require—(1.) Regularity of issue; (2.) Methodical arrangement of material; (3.) The exercise of sound judgment, and a firm will in the acceptance and rejection of material; (4.) An editorial management above the average capacity of its readers; (5.) A position of financial independence that shall keep the journal free from all pecuniary considerations; (6.) A good supply of material for publication, that is the result of careful observation reduced to the conditions of a sound and accurate statement; (7.) Works of imagination, if we are fairly told that they are speculative or imaginative, for the “imaginings of one generation oft-times become the sober facts of the next;” and, lastly (8), but above all other things, we want for the success of journalism—nay, of all literature—critical readers.

I need not enlarge upon these points. I think they express to some extent what we want, and indicate the direction in which we must look for the supply of our requirements.

It is well to remember that the nation (of those to which I have referred) that has produced the smallest number of works on Dental science during the present century is also the nation that first introduced and has since contributed most largely to the foundation of Dental journals—I mean, of course, the United States.

Periodical Dental literature had its birth in New York on June 1st, 1839, and the 'American Journal of Dental science' appeared under the editorship of Dr. Chapin A. Harris and Dr. Eleazar Parmly. The early volumes of this journal are very interesting, containing as they do the records of the organisation of the Dental profession in America.

The first periodical published in England was the 'Quarterly Journal of Dental Science,' brought out by James Robinson in 1843. Only two numbers appeared however, and in 1844 was commenced the fortnightly Dental paper called the 'Forceps,' promoted and owned also by Robinson. These papers are instructive and interesting, for Robinson and Purland, who assisted in the editing of the 'Forceps,' had a very clear way of expressing their views, and never appeared to lack the courage of their convictions. It is not quite certain whether we should now admire such great plainness of speech as may be found in the 'Forceps' for the year 1844. During the first year of the appearance of this journal Mr. Edwin Saunders' Lectures on Dental Surgery were reported as they were being delivered at St. Thomas's Hospital, and it is interesting to notice here that he was the first dentist to that ancient charity, having been appointed in 1839. The 'British Journal of Dental Science' was founded by Blundell in 1856, and after its commencement was managed in the same way I think as the American Journal, that is by a Committee and Editors; but in course of time all this changed and Charles James Fox became sole editor and proprietor. We must scarcely pass this time by without some tribute to a man who under great disadvantages laboured very hard, and I believe unselfishly, for the cause of Dental journalism and Dental reform. The 'Monthly Review of Dental Surgery' was founded by myself in 1872, and after various vicissitudes and changes, became the property and official organ of the British Dental Association. In the early days of its existence I received much valuable and valued help from Mr. Sewill, and later from Mr. Gaddes; it has now a definite and important position in the field of Dental Journalism, and it is to me a source of unqualified pride and gratification that it should promise to become one of the most powerful agencies in the political and scientific advancement of our profession. We have also to note the 'Dental Record,' a publication of recent growth, and the result of purely financial enterprise.

In France we have four journals devoted to our specialty; in Germany two; in Italy three; in Havannah one; and in America six or seven, I am not sure which, as American

journals though possessed of considerable vitality, are also subject to painfully sudden death.

Of transactions of societies and associations, we have a fair number, some of them published separately, others merely reprinted from the journals of the day. These are a very important contribution to our literature, but they are so managed as for the contents to be singularly inaccessible to the student.

I would fain have given a detailed account of the many valuable papers read before the Odontological Society of Great Britain, but time was not available to look through some five and twenty volumes to find particulars that might be reasonably expected to appear in a list issued at fixed periods. Yet some of the best work of our best men is thus pigeon-holed away as uncatalogued articles.*

It is not necessary that I should offer any criticism upon the Journals to which I have referred, as I have already given what I deem the essential elements of a good periodical, so I may leave you to decide how far any of those that I have mentioned come up to the required standard.

I must, however, speak to you in reference to our own special publication, 'The Journal of the British Dental Association.' Many of you are not satisfied with it. I am happy to say that many of us who have to do with it, are of precisely the same opinion: and, what is more I trust we never shall be, for when self-satisfaction begins, the prospect of excellence dies out. It might be worse, but it ought to be better. Will you help us? We like critics; they are the cantharides of the literary pharmacopœia—stinging, but stimulating. Will you take the trouble to be critical?—bearing always in mind, however, that

"Ten censure wrong for one that writes amiss."

But in other directions also will you not help? Do you not see cases worthy of recording? Have you not statistics to compare with those of other observers? Have you gone on all this time working on the knowledge that others have previously collected for you, without recognising the obligation you are individually under to contribute some observation, fact, or experience?

Do not make any of the usual excuses to yourself; after editing several papers I have had experience of them all and know them by heart. But "if out of your excuses we

* Since writing the above I have made a list of the papers read before the Odontological Society of Great Britain during the first quarter of a century of its existence, and also a list of the papers read before the International Medical Congress held in London in 1881; these have been embodied in the Appendix.

could make but thongs of scorn," how some of us would like to whip you into a more unselfish activity. Surely the Muster Roll of Worthies who have laboured in the past offers some attraction to you. They were not selfish or mere money-seekers; some died in poverty, most of them led lives of devotion to their science and work, and all unite in showing us an example that we may well imitate. We must take our part in human progress, the great wave will pass on, and it is often left for us to decide whether we will keep in the middle of the current, or by attempting to evade our work be cast aside as the flotsam and jetsam of the desolate shore.

But I must not detain you longer. For the present my task is done. Yet, looking back to the long past I seem to see in shadowy outline one after another dropping out of the ranks, and still the places filled up again and yet again, each fighting loyally against error, ignorance and disease, and each in turn bowing before the ever-present "imperious Cæsar of necessity," and chanting in mournful yet not hopeless cadence "Hail Cæsar! the dying salute thee."

So living, so dying, we shall promote the sacred cause of humanity; and do our part in building up the structure of eternal truth.

Reflections from the Surgery.

A CASE OF FRACTURE OF LOWER JAW TREATED BY A NEW FORM OF INTERDENTAL SPLINT.

By JAMES WILLIAMS, L.D.S. Eng.

DENTAL SURGEON TO THE WALSALL COTTAGE HOSPITAL.

R. S., æt. 15, was admitted into the Walsall College Hospital in December, 1882, suffering from a compound comminuted fracture of the lower jaw in addition to other injuries, the result of being knocked down and run over by a truck of coals whilst engaged in his occupation of driver on the pit bank. I was called by the surgeon in charge of the case to

devise a splint for the treatment of the above mentioned injury, and on examination I found a double fracture extending on left side through the body of the jaw in front of first molar and on the opposite side through the socket of the canine tooth (which was subsequently removed as it was preventing union). The soft parts throughout the whole extent were seriously lacerated rendering thereby the fracture compound. The intervening part of bone was so freely moveable as not to permit of its being secured by the methods ordinarily employed. However, I made an attempt to secure the parts in apposition by means of a wire splint. This failing, I then tried gutta-percha caps on the molars secured in position by a four-tailed bandage, but as before stated neither expedient was attended with success on account of the fragment being constantly displaced by the action of the muscles attached to it during the act of deglutition. I therefore devised the following apparatus: having cut the handle from a lower impression tray and soldered a screw plate on each side, I then filled the tray with impression composition, placed it in the mouth after the manner of taking an impression, at the same time holding the parts in apposition until the compo set hard. I also soldered screw-plates on a large upper impression tray flattened out in the centre and fitted as accurately as possible to the external parts along the extent of the jaw, this I filled with compo padded with absorbent wool and then fixed the trays in position by means of thumb-screws. This apparatus was worn for a fortnight, the patient being able to speak and eat with comfort, the top of the internal impression tray affording a masticating surface. At the end of that time it was necessary to remove the splint, as the screw-plates were preventing the external laceration at the angle of the mouth from healing. I then devised a smaller screw clamp which kept the parts in position and allowed free use of the jaw. The progress of the case was uninterrupted and the result most satisfactory, the boy being discharged cured at the end of six weeks with the jaw perfectly sound.

British Journal of Dental Science.

LONDON, MAY 1, 1883.

THE animated debate which took place upon the third reading of the Medical Act Amendment Bill in the House of Lords on the 19th ultimo has given us an idea of the probable changes that are likely to be made in medical education. The part which is of chief interest to us has passed without amendment, namely, Section 28, but what modifications may be made during its passage through the Commons is difficult to conceive. It appears that general education will take a greater part in the curriculum than it has hitherto, for we find that great provisions are made for the full representation of the universities, and in that case influence may be brought from those quarters to insist upon the medical man of the future being a graduate in arts. Formerly the preliminary examinations of the College of Surgeons and Apothecaries' Hall were sufficient for qualifications necessary for practice, the higher examinations being required for the Fellows only, this we take it will all be altered. According to the present condition of the Bill the College of Surgeons of England and the College of Physicians of London will have three representatives each on the Board of Examiners, and one for each of the five universities. Ireland, two for the College of Surgeons and Physicians and three for the Royal University and Trinity College respectively. The Apothecaries' Hall of Dublin will not be represented at all, and it has not transpired what will be the fate of the similar institution of London. The two Royal Colleges in Scotland will be represented by three members each.

This may be taken as the outline for medicine, and from it Dental examinations must come, we hardly think that the universities will be represented on the Dental Board, but the spirit that prompted the reform in medical education will be carried into Dentistry. Our grievances are the same, and any measure that will give to the public the guarantee that the practitioner has passed through a course of study,

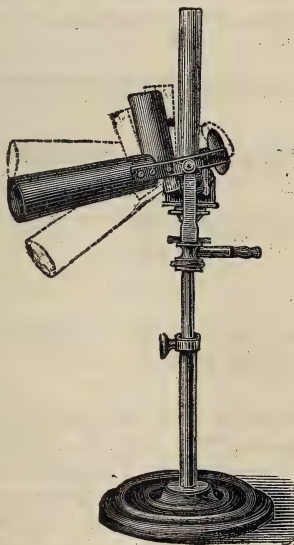
and his competency to practise proved by stringent examinations should receive the utmost support.

Manipulative Miscellany.

All instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month, they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits, and without any intention or wish to pit one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

DR. TELSCHOW'S REFLECTOR.

SINCE our last issue we have received an illustration of this



gas reflector, which we now insert for the benefit of our readers.

To the notice already given we would add that another form is also made for use with paraffin oil.

D'OR'S ELECTRIC LIGHT.

WE have received from Mr. Heney, of Gipsy Hill, one of the apparatuses for the D'Or's Electric Light, but have not had sufficient time to test its qualities for Dental purposes to enable a report to be given. We hope, however, to do so in our next issue.

BALDOCK'S ANTISEPTIC TOOTH DRESSING.

WE have received through Messrs. Ash and Sons a sample of the above preparation. Without subjecting it to analysis we find it contains among other things eucalyptus oil and iodoform which in themselves have been proved so useful in the treatment of alveolar abscess and putrid canals. The few cases in which we have had the opportunity of trying it are proceeding in such a way as to promise satisfaction, and we have, therefore, much pleasure in bringing the preparation before the notice of the profession.

Reports of Societies.

SOCIETY OF LICENTIATES IN DENTAL SURGERY, GLASGOW.

THE concluding meeting of the present season was held in Anderson's College on the 11th ult. The President in the chair.

After the reading of a most interesting paper on the "Idiosyncrasies of Patients," by Mr. W. S. WOODBURN and the usual discussion thereon, the Chairman in a short address congratulated the Society on the progress made during the past winter; stating that the season had been productive of many valuable papers and interesting specimens, and that the discussions had brought out a valuable interchange of views on many subjects of general interest.

The lengthening day indicated the near approach of attractions of another sort, and while, for the present, these meetings are to be interrupted it is only that we may meet again at the beginning of another winter invigorated by the summer

interval, and ready to make the next season as useful and interesting—or rather more useful and interesting than even this had been.

Amongst the cases of interest Mr. McCASH showed a very diminutive supernumerary tooth, not more than a quarter of an inch in length, of the usual conical shape and weighing a little under three-quarters of a grain, in all respects a perfect miniature tooth.

Mr. W. S. WOODBURN described a case of abnormal development of pulp in an upper molar discovered in excavating a cavity, where the caries had penetrated deeply into the heart of the tooth, the pulp coming almost in contact with the enamel on the masticating surface.

Mr. BROWNLIE showed three cases of interest. A splint devised by him for retaining in position a lower jaw which had been broken on both sides just below the condyles, and complicated by a swelling and threatening abscess.

An obturator to remedy the defect resulting from the excision of the upper jaw, right side. The peculiar feature in this case was that the obturator was *hollow*—one thickness of rubber, save where trimming might be needed—forming the sides and palate of the piece.

A form of valve for producing suction. Without the aid of plaster impressions, he had in every case since its introduction succeeded in obtaining results not to be got in the ordinary way, and giving to the wearer *at once* the feeling that the case was really being held up.

This was the result of a four months trial, and it was brought forward at this the last meeting, that members might have ere next meeting the chance of putting it to the proof. It was shown recently to Messrs. Ash and Sons' traveller who thought it might be added to the list of his small wares.

EASTERN COUNTIES DENTAL ASSOCIATION.

ANNUAL MEETING AT IPSWICH.

THE second annual meeting of the Eastern Counties Dental Association—which comprises the following counties, viz. Norfolk, Suffolk, Essex, Cambridge, Lincoln, Northampton, Huntingdon, Bedford, and Hereford—was held at the Masonic Hall, Ipswich, on Wednesday, the 11th inst. There were present: Mr. R. White, Norfolk (President); Mr. J. Fenn Cole, Ipswich (President elect); Mr. J. S.

Turner and Mr. Parkinson, London; Mr. N. Tracy, Mr. Fraser, and Mr. C. Tindal, Ipswich; Mr. A. Jones, Mr. A. Rogers, and Mr. Cunningham, Cambridge; Mr. Littleboy, Mr. Harcourt, Mr. W. White, and Mr. Bridgman, Norwich; Mr. Frank Hall, Hertford; Mr. W. H. Tracy, Bury St. Edmond's; Mr. Marsh, Colchester; Mr. Dearle, Diss; and Mr. W. Stringfield (hon. secretary). Amongst the visitors were Dr. Chevallier, Dr. Benham, Mr. G. T. Ellerston, and Mr. Wm. Hay.

The PRESIDENT expressed the pleasure he felt in seeing such a large and influential attendance. The first business on the agenda paper was to consider a proposed alteration of the bye-laws which would admit of the affiliation of the Association with the British Dental Association, as its Eastern Counties Branch. The matter had been under discussion by the Council, who had unanimously resolved to recommend the alteration.

A discussion arose with reference to that part of the proposed alteration of Bye-law, No. 1, which would have the effect of excluding from the Society all those assuming any title or degree that could not be placed on the Dental Register.

Mr. CUNNINGHAM moved that the words referred be omitted. There were many gentlemen who had legitimately obtained degrees in certain American colleges, and to call upon these gentlemen to relinquish the title they had very justly assumed in order to become members of this Branch would be most unfair, they would be adopting a qualification and a definition different from that adopted by the parent society and other of the branches. The rule as it stood without this qualification was a sufficient safeguard, and would meet such cases as the Association wished to exclude.

Mr. N. TRACEY supported the recommendation of the Council; the assumption of a degree which was not legitimate was a very bad kind of advertising, worse than an honest advertisement which went before the world for what it was worth.

Mr. J. S. TURNER pointed out that there was no such thing as an illegitimate degree. It would be remembered that not a very long time back there was no qualification in this country—anybody could become a Dentist. A certain number of gentlemen, anxious to do what best they could, took the trouble to go over to America to obtain that qualification which was denied them in their own country, these men legitimately studied in America, and went through the curriculum that was thought necessary in those times. Whilst they honestly obtained and were fairly entitled to use

those degrees, subsequent legislation made it impossible for them to place those diplomas on the Dental Register. To exclude those gentlemen from this Branch because of the assumption of degrees for which they were fairly entitled was carrying the thing further than the legislature had done.

The discussion was continued for some time, and eventually Mr. W. STRINGFIELD, the Hon. Secretary, proposed that the first rule should be expunged altogether and that the second bye-law should be altered to read as follows:—"Any registered practitioner, being a member of the British Dental Association not disqualified by any bye-law, who shall be recommended as eligible by any three members of the branch (one being from personal knowledge) may be elected a member by the Council. The election to be by ballot; three black balls to exclude."—This was seconded by Mr. W. White, and carried unanimously.

Several other alterations in the bye-laws of a minor character were approved.

It was resolved that the next meeting be held at Cambridge, and that the time of meeting be left to the Council.

On the motion of Mr. A. ROGERS, seconded by Mr. W. STRINGFIELD, Mr. Arthur Jones, L.D.S.I., of Cambridge, was nominated President elect for 1884.

The PRESIDENT said he was sorry to have to announce that their excellent Secretary had found it impossible to continue his services in the future. His resignation was received with great regret, but he was pleased to announce that Mr. Cunningham had been induced to accept the office.

On the motion of Mr. F. HALL, seconded by Mr. N. TRACEY, Mr. Cunningham was unanimously elected hon. secretary.

The HON. SECRETARY (Mr. Stringfield, of Lowestoft) then read his report of the proceedings of the past year. From the success of their first general meeting he had hoped to be able on this occasion to report a large accession of members, but in this they had been disappointed, only four members having been elected during the year, making their present number twenty-eight; this apparently slight increase was not, however, due to any lack of energy on the part of the Executive.

The council had met several times during the year, the principal matter engaging their attention having been the proposed affiliation with the British Dental Association as its Eastern Counties Branch. This question having been fully discussed, it had been decided to recommend that the affiliation should be effected, and that the necessary alterations in bye-laws should be made. He hoped the members would

approve of this decision, and that the affiliation would prove beneficial to the profession.

The Council was also unanimously of opinion, and had expressed this in the recommendation, than in future all applications for membership of the British Dental Association which might be received from a district in which a Branch existed, should be referred to the Council of that Branch before action was taken upon the proposal.

In conclusion, the Secretary expressed his thanks to each member of the Association for the courtesy shown towards him on every occasion during the time he had held office.

On the motion of the PRESIDENT, seconded by Mr. CUNNINGHAM, a hearty vote of thanks was passed to Mr. Stringfield for his past services.

Mr. STRINGFIELD suitably acknowledged the vote, and thanked the members for the kindness which he had always received at their hands.

The retiring PRESIDENT (Mr. Richard White, of Norwich) then delivered his valedictory address. After gratefully acknowledging the services of the Council, and expressing the obligations he was under to the Honorary Secretary, he proceeded to review briefly the principal events of the past year.

He looked back with very great pleasure to their first meeting at Norwich last year, when many of the members met each other for the first time, and professional friendship were begun which might never have been formed but for that auspicious event. From what had since transpired, he was persuaded that educated Dentists only required to know each other better to create mutual feelings of interest in the advancement of their professional status, and that then, as regards the maintenance of strict professional conduct they would fairly bear comparison with the members of the legal or medical professions. The desire to combine for objects connected with the advancement of Dental science appeared to be rapidly gaining ground amongst those who took an elevated view of Dental politics, and he trusted that gradually a larger number of practitioners would qualify themselves for membership of these associations by giving up practices which were not in accordance with the strict rules of professional conduct.

And here he felt obliged to allude to a subject which would greatly tend to strengthen professional status, and which would operate powerfully in placing the members of the profession high in the estimation of their patients, and that was speaking well of their professional brethren to patients. If a Dentist could not conscientiously say anything in favour

of a fellow practitioner, he should at least say nothing against him. No one could expect to pass through life without making mistakes. The most accomplished physicians and the most skilful surgeons could not escape, in the course of their careers, making many blunders, and most assuredly the Dentist whose practice extended over a course of years would have many to answer for. Therefore, when a dissatisfied patient came to them complaining of a brother practitioner, they should always endeavour to place him in as favorable a position as possible, without stepping beyond the bounds of truthfulness. They would thus not only have the satisfaction of having done all they could to help a brother practitioner out of a difficulty, but would find that the patient even, on thinking quietly over the circumstances, would esteem them more highly.

Professional intercourse with our medical brethren ought to be sedulously cultivated, but this could only be accomplished by adhering to those rules of conduct which were found to prevail amongst educated men who take an interest in their calling and desire to place it in an elevated position. During the past year the subject of the "Limitations of Dental Surgery" had been occupying the attention of certain members of the profession. The subject was first brought before the Odontological Society by Mr. Gaddes, who, having performed a somewhat severe operation for the removal of a sarcomatous tumour, wished to obtain the opinion of the Society with reference to the operations which members of the profession who possessed the license in Dental Surgery might perform in the mouth. He (Mr. White) was glad to see that the general opinion was that the Dental Surgeon had better leave these cases of oral surgery to the general surgeon, and confine himself (even though he should be a member of the Royal College of Surgeons) to Dental Surgery, *i.e.* simply the treatment of the dental tissues. He thought most would concur with this view; for even supposing that the Dentist had the full qualification of a surgeon, he had quite enough to attend to in his special department, without in the least encroaching upon the province of the general surgeon. It was much better that a reciprocal feeling should exist which would cause the surgeon to send to the Dentist for his advice and attention those cases in which the condition of the teeth was supposed to influence the disease under treatment, and that the Dentist should refer the various cases that came before him requiring medical treatment to the general medical attendant for his assistance. Thus a proper feeling would spring up in course of time between the practitioners of medicine and of Dental Surgery

which would greatly conduce to the advantage of the public.

Coming now to matters more immediately affecting themselves, he was sorry to say that the number of those who had rallied round the Association was not so great as he had anticipated, but he trusted that, as time passed on, those who now kept aloof would see the advantages which would accrue to themselves, as well as to the general body of Dentists in the district, in assembling occasionally at these interesting gatherings, thus consolidating the body of practitioners who were striving to elevate their profession and defending their position from the attacks of the charlatans who surrounded them. He felt convinced that such local associations would do much to forward the desiderata they all had at heart, and as a branch, having the support of a head to guide and a body to rally round, they would obtain, as a natural consequence, a power and influence they could not attain as an independent body; whilst they would be able to do the work required locally with equal, if not greater, advantage.

He believed that good effects arising from this movement in the eastern counties were already to be seen. Advertising—that bane of the profession—has already decreased, and he trusted they might yet add to their members many who had determined to discontinue the practice.

The question of affiliation with the British Dental Association had occupied the attention of the council since the last general meeting, and the bye-laws having now been amended to suit the requirements of the Association, he trusted there would be no further difficulty in carrying out the arrangement, so that at their next meeting they could assemble as the Eastern Counties Branch of the British Dental Association.

The meeting of the British Dental Association at Liverpool, on the 25th and 26th August last, was a brilliant success, and those who had the opportunity of attending it could have but one opinion as to the good results which must arise from it to the profession generally; whether they considered the great treat afforded to members by the “clinics,” by which they had the pleasure of witnessing demonstrations by some of the most accomplished operators in this country—affording an amount of interest and instruction which would not readily be forgotten by those who crowded round the operating chairs, young and old alike—or the papers read, which were of a highly interesting and instructing character. The pleasure, also, of meeting for the first time those who had been known for many years by repute only added greatly to the gratification produced by this most successful gathering of Dental practitioners from all parts of the kingdom.

There was a subject then under the consideration of the members of the British Dental Association to which he felt bound to allude, viz. the establishment of a benevolent fund in connection with the Association. There seemed to be a difference of opinion as to whether the benefits of the fund should be confined to members of the Association, or whether any Dentist, whether a member or not, requiring assistance, should obtain its aid. Undoubtedly, in accordance with the original scheme of the Association, a benevolent fund was to be established, but surely its resources should be devoted, in the first place, to the assistance of deserving *members* only, unless it became so large that outsiders might also be allowed to participate in its advantages. The promoters of the scheme certainly deserved the highest praise for their philanthropic views and intentions. He had no doubt that it would receive the support which it required, and would eventually come to be a prominent feature of the Association.

During the past year death had deprived them of one intimately connected with Dental practice, though not a Dentist. He alluded to the late Mr. Clover, who took a great interest in the introduction of nitrous oxide gas, as an anæsthetic, in this country, and who had greatly promoted its employment. Mr. Clover as most of those present were aware, was a Norfolk man, having been born at Aylsham, and having commenced his medical career with the late Mr. C. M. Gibson, of Norwich. He was a man possessed of great mechanical ingenuity, which he applied to medical and surgical practice. Of high principles of honour, beloved by all who had the pleasure of knowing him, always ready to do a kindness, his death had caused a gap which would not readily be filled.

America had also experienced a great loss in the premature death of the greatest Dental operator of the day, Dr. Marshall Webb, of Lancaster, Pennsylvania, U.S.A., who though scarcely forty years of age, had by his thoroughness in everything he attempted, early reached a position attained to by few.

It only remained for him, in conclusion to ask pardon for any failings he might have committed in matters of judgment, and to assure his hearers that, however inefficiently he had performed the duties of his office, he had endeavoured to fulfil them to the best of his ability, having in view the advancement of a profession in which he had so long laboured, under disadvantages happily unknown to the rising generation, and the fostering of professional friendship, which would tend to sweeten life and smooth the rugged path which

the young practitioner had to traverse ere he reached the goal of his ambition.

The PRESIDENT then vacated the chair, which was taken by Mr. J. FENN COLE, the President for the year 1883-4.

On the motion of Mr. J. PARKINSON, seconded by Mr. HARCOURT, a hearty vote of thanks was accorded to the retiring President.

On the motion of Mr. CUNNINGHAM, seconded by Mr. HALL, it was resolved "That this Association is of opinion that in the interests of the public, and for the efficiency of medical charitable institutions, it is expedient that a qualified Dental surgeon should be attached to the medical staff of all general hospitals and dispensaries, and that a copy of this resolution be sent to all such institutions within the district."

The members then adjourned to the lower room, where they were most hospitably entertained by the newly-elected President, Mr. J. Fenn Cole.

The members re-assembled for business at 3 p.m., when Mr. J. FENN COLE took the chair as President, and proceeded to deliver his inaugural address.

After thanking the members for the honour they had done him in selecting him to occupy that position, and referring in complimentary terms to the courteous and able manner in which his predecessor had carried out the duties of his office, he went on to congratulate the members upon the result of the past year's work. If they had attained to nothing more than a means of promoting social intercourse, this of itself appeared to him to be a matter of vital importance to the well-being of the profession. By such intercourse and co-operation they not only secured friendship with those who were known before only by repute, but also provided a channel for the advancement of science in connection with their art. He was sorry to find that it was the opinion of some that the British Dental Association had done its work, and that there was no further need for it. A great work had unquestionably been accomplished, but there was still much more to do. Events would probably arise in the future in which its aid would be required and would have to be exerted on behalf of the profession.

Registration would in course of time have its due effect, but some means were required in the meantime by which *all* classes of Dentists could, if they desire it, come in contact with elevating influences. The legislature has done its part, and it was now the turn of the profession to act for itself. Some of them at the time regretted the passing of the

Dental Act, but as it appeared the only way to meet the difficulty—and he thought subsequent events had proved that this was the case—it was the duty of all to face matters as they now stand, and to do all in their power to promote unity in the profession. Nothing, in his opinion, could aid that unity better than the formation of Dental associations or kindred societies. By becoming members of such bodies, and abiding by their bye-laws, those who had disgraced their calling might be induced by example to become respectable practitioners.

But he looked to the British Dental Association to accomplish more than this. By periodical assembly for the discussion of scientific and practical subjects, members would advance in knowledge and gain professional respect, and would thus benefit themselves and those who came under their treatment. It might also be necessary for Dental practitioners to defend themselves against a legislative enactment which might deprive them of a title they had a right to assume, as set forth by the terms of their diplomas. Combination was, then, a useful weapon of defence.

The Medical Council having taken the Dental profession under its care, no licentiate would, he thought, wish to see Dental affairs placed under the management of a distinct board. It therefore behove them, by the elevation of their professional status, to render themselves worthy of this recognition as an important branch of surgery. It had been acknowledged that Dentistry had of late years made more progress than almost any other science, and those who were fortunate enough to be present at the International Medical Congress, in August, 1881, must have felt justly proud of the position the Dental profession took at that meeting. The papers read by some of the eminent members of the profession on subjects connected with the Dental art, treated with the utmost skill, could not have failed deeply to impress all hearers with the fact that their calling was assuming a high position. Their relation to medicine was an important one; it was beyond a doubt that the Dental practitioner was able to render valuable assistance to his medical colleague in many cases. Indeed, the study of the human body and its diseases now comprehended so much that it is almost impossible for any one to gain a complete mastery over any particular section unless he made it a specialty.

Much had been written of late about the "limitations" of their special branch; he would not attempt to define these limits, but he thought that the nature of the qualification possessed should in a measure guide practitioners as to the class of cases they should take. The Dental Surgeon had

no wish to infringe on general surgery, but if, on the other hand, he was only supposed to extract and fill teeth, why should he be obliged to incur the labour and expense of going through an extended course of study. The Dental curriculum was certainly not a slight undertaking. Still the Dental practitioner could not be too well qualified, and it was a question which should be considered by the student whether it would not be to his advantage to arm himself by taking the M.R.C.S. as well as the L.D.S. By having the double qualification he at once places himself beyond the pale of jealousy and gains complete independence of action. Too much importance, however, should not be attached to the taking of high degrees. It must be remembered that no man's education was ever complete, be his occupation what it may, and the Dental Surgeon, if he would keep pace with the times and stand in foremost ranks of the profession, must always be prepared to adopt new appliances and new methods of treatment. Mr. C. S. Tomes, in a very able paper, read at the Annual General Meeting of the Association, at Liverpool, had complained that the Dental literature of the present day lacked true scientific spirit. He (the President) feared it was too true that methods of practice were taken for granted, and carried out as routine without any deliberate study or experiment, men working on in the same groove without taking the trouble to test its truthfulness.

In conclusion he would also point out that it was possible to acquire a large amount of professional knowledge and many titles, but unless there was conjoined with these the moral and social qualities of a gentleman, the possessor of them would never rise to eminence. The upright path might sometimes be a difficult one for the young practitioner; he might experience disappointments in various ways, and often suffer pecuniarily from the competition of the unscrupulous, but the making of himself was in his own hands, and if, when he first launched his bark, he took care to place integrity at the helm he would be sure to reach the haven of success.

A short conversation followed upon subjects of professional interest, amongst the other subjects introduced being the question of the electric light as applied to the diagnosis of the teeth, which was brought forward by Mr. Geo. Cunningham, who gave practical demonstration of its utility. A small $2\frac{1}{2}$ candle Swan lamp with an incandescent carbon filament was introduced into the mouth of the patient, and the teeth were rendered translucent, enabling the operator to detect at once the presence of disease.

Mr. N. TRACY then read the paper upon Regulating Teeth, which will be found at page 166.

A short discussion followed, after which

Mr. R. W. WHITE read a paper on "Abscesses in the Superior Maxillary Bone," and this was followed by

Mr. GEO. CUNNINGHAM's paper entitled "Economies of Dentistry; an attempted estimate of the relation of professional fees, to Therapeutic Treatment," which elicited considerable discussion.

A vote of thanks to the readers of the papers concluded the afternoon meeting. An exhibition of Dental appliances was open in the ante-rooms during the day.

In the evening the members and visitors dined together at the Golden Lion Hotel, and a very pleasant evening was spent, but we must defer the further account of the proceedings until our next issue.

Dental News.

GENERAL MEDICAL COUNCIL.

At a meeting of the Medical Council held on Thursday, April 20th, the following table, showing the results of professional examinations held in 1882 for qualifications granted under the Dentists Act, was presented.

Name of Licensing Body.	Diplomas.	Nature of Examination.	With Curriculum.		Without Curriculum.		Total.	
			Number rejected.	Number passed.	Number rejected.	Number passed.	Number rejected.	Number passed.
Royal College of Surgeons of England.	Licence in Dental Surgery.	Written, Oral, and Practical.	1	21	1	0	2	21
Royal College of Surgeons of Edinburgh.	Licence in Dental Surgery.	Written and Oral.	0	1	3	5	3	6
Faculty of Physicians and Surgeons of Glasgow.	Licence in Dental Surgery.	Written, Oral, and Practical.	0	1	5	3	5	4
Royal College of Surgeons in Ireland.	Licence in Dental Surgery.	Written, Oral, and Practical.	0	0	15	45	15	45
University of Harvard.	D.D.M.	Written and Practical.	5	3	0	0	5	3
University of Michigan.	D.D.S.	Written, Oral, and Practical.	3	32	0	0	3	32
Totals.....			9	58	24	53	33	111

Dr. PITMAN moved that the above returns be received and entered on the minutes. The motion was seconded by Mr. Marshall.

Dr. FERGUS.—(Crown nominee for Scotland) I wish to ask when are the examinations without a curriculum to cease and determine? I had an impression that they were to cease in August, 1881, I wish to know whether there should be still examinations without a curriculum, seeing that the time has now elapsed since under the Dentists' Act the curriculum should be forthcoming. I see a large number of these are examinations without a curriculum.

Mr. SIMON.—Most of them are at the Irish College of Surgeons.

Dr. FERGUS.—I would like to know how long it is to go on. I think something was mentioned about August, 1881; but I had no idea that the examinations were to go on beyond that period without a curriculum.

Mr. MACNAMARA (Representative of the Royal College of Surgeons in Ireland).—The practice of the College of Surgeons in Ireland has been hitherto—and I presume will be for some time—to examine any person *sine curriculo* whose name you have put on the Dental Register. We feel that it is highly to the credit of a gentleman who has succeeded in getting his name on the Register by Act of Parliament for him to come to a licensing body and subject himself to a searching oral, written and practical examination. Several of these gentlemen have been rejected, and they have gone back and worked up their studies and they have come afterwards and proved that they have benefited by the rejection.

Dr. QUAIN.—The council always appoints a time for the discussion of Dental business. Perhaps Mr. Macnamara will kindly postpone his observations until the question comes up.

Mr. MACNAMARA.—Certainly, It was in answer to what was said.

Dr. FERGUS.—I thought that I was in order in bringing this up; but I am quite willing to postpone it.

The PRESIDENT.—(Dr. Acland) The motion is that the returns be received and entered on the minutes.

Dr. STORAR.—I would beg respectfully to suggest that it would be as well to postpone this motion until we come to Dental business. I think that a good deal of conversation may be obviated. (Hear, hear.)

The PRESIDENT.—Then is it the pleasure of the council that this motion be postponed to a future day?

The postponement was agreed to.

At the meeting of the Council on the 21st April, the consideration of the motion was resumed.

The PRESIDENT was about to submit the proposition to the meeting.

Dr. FERGUS, interposing said.—Before you put the motion I wish to ask the question which I asked before as to when the examination *sine curriculo* should cease and determine. I have raised the question before, and I was asked to postpone it till the time for Dental Business came on.

Mr. MACNAMARA.—Mr. President, as representing one of the delinquents I suppose that I am bound, probably, to say a word or two. I have wired to Dublin this morning for information which I should have wished to place before the Council on this subject. However, I can do it instantly, I presume, on some other day.

The PRESIDENT.—Mr. Macnamara, it is time really for the business of the Council to come to an end, and if you wish to make any statement about this, would it not be better to wait till you have the answer from Dublin.

The motion for the reception of the report was carried.

On the assembling of the Council on the 23rd of April, Dr. Pitman, chairman of the Business Committee, adverted to the question which had been raised at the former meetings as to granting a license in Dentistry upon an examination *sine curriculo*.

Dr. FERGUS.—I did not ask Mr. Macnamara. I wish clearly to indicate to the Council that I did not ask any individual body. I asked when examinations *sine curriculo* should cease and determine. I was not making it a personal matter as to any one body.

The PRESIDENT.—Do you wish to put that question officially to the Council.

Dr. FERGUS.—Through you, Mr. President, if you please.

The PRESIDENT.—Then will you give notice of that question, and it will be answered to-morrow morning.

Dr. STORRAR.—May I suggest to Dr. Fergus that any answer to this question, or anything bearing upon it, should be deferred until we get formally on the Dental business.

Dr. FERGUS.—Have you any Dental business?

Dr. STORRAR.—Oh yes.

Dr. QUAIN.—Happily there is no other Dental business but this.

Dr. STORRAR.—I intended to give notice of a motion of this character:—"That in the opinion of this Council examinations in Dentistry *sine curriculo* should cease and determine after the 31st December, 1883."

Dr. FERGUS.—I shall second that, that will keep us in order.

The subject was again postponed.

The following extract from the Finance Report of the Council bears on the subject of Dental Finance:—"Table (D) shows the receipts and expenditure of the Dental Registration Fund for the year ending January 1st, 1883. In the receipts, £718 7s. 5d., it will be noticed there is an increase of only £27 11s. 3d. over those of last year, while the expenditure £1227 18s. 10d. has been greater by the sum of £129 11s. 7d., attributable to its share of the increased expenses of the General Council's Session, leaving the deficiency of income for the year £506 2s. 1d., compared with a deficiency of £457 11s. 1d. in 1881. (See Table D.)"

At the sitting held on Wednesday the 25th under the presidency of Dr. ACLAND,

Dr. STORRAR moved the following resolution of which he had given notice in the previous week:—"That in the opinion of this Council all examinations in Dentistry for Dental qualifications *sine curriculo* should cease and determine on the 31st of December, 1883." He said: Allow me to refer to a memorial from the British Dental Association which is recorded in volume nineteen of the minutes (1882), page 119. I will read that memorial:—"The Representative Board of the British Dental Association, anxious that the standard of Dental education, whereof the Medical Council are the appointed guardians, should be maintained at a high and uniform level throughout the United Kingdom, beg respectfully to direct attention of the General Medical Council to the completion of the time during which, in accordance with the terms of the Council's minutes (July 16th, 1879) examinations should be conducted *sine curriculo* by the Royal College of Surgeons in Ireland. In the opinion of the Board the time has now arrived when exceptional examinations should be altogether discontinued by all the licensing bodies in favour of strict uniformity of educational test already adopted by one or two, otherwise the value of the licentiate-ship will be greatly deteriorated as a guarantee of professional competence. We venture to remind the Council that, by Section 22 of the Dentists Act, they have the power to supervise these examinations, and we would suggest that this power might now with real public advantage be exercised. We have the honour to be, your obedient servants, JOHN TOMES, EDWIN SAUNDERS, JAMES PARKINSON, THOMAS A. ROGERS, THOMAS UNDERWOOD, JAMES SMITH TURNER (Hon. Sec. B.D.A.), Members of Business Committee.—British

TABLE D.—Returns to both Houses of Parliament of Receipts and Expenditure of the Dental Registration Fund of the General Medical Council, for the year ending January 1, 1883, made pursuant to Section XXXIII of the Dentists' Act (1878).

RECEIPTS.		EXPENDITURE.	
	£ s. d.		£ s. d.
BALANCE from 1882	9273 19 4	GENERAL COUNCIL'S FEES AND OTHER EXPENSES	444 13 6
Amount (deducted) to be repaid to		EXECUTIVE COMMITTEE'S FEES AND OTHER EXPENSES	79 2 0
ENGLISH BRANCH COUNCIL	434 12 5	DENTAL COMMITTEE'S FEES AND OTHER EXPENSES	26 5 0
	8839 6 11	ENGLISH BRANCH COUNCIL'S FEES AND OTHER EXPENSES	7 7 0
REGISTRATION FEES:		GENERAL EXPENSES (House Expenses, Salaries, &c.)	466 3 7
83 Registration Fees at £5 each	415 0 0	PRINTING	131 13 1
86 Registration Fees at 6s. each	21 10 0	LAW EXPENSES	97 7 0
	436 10 0	MISCELLANEOUS EXPENSES:	£ s. d.
SALE OF PUBLICATIONS	10 1 9	Auditors' Fees	10 10 0
		Expenses at GENERAL COUNCIL'S Session	14 9 4
		Bank Charges	0 8 4
		BALANCES:	25 7
DIVIDENDS:		Cost of £9281 15s. 3d. of New Three per Cent. Stock	9000 0 0
One year's Dividend on £9281 15s. 3d. of New Three per Cents. (less Income Tax)	271 15 8	Amount in Bank on January 1, 1883	220 10 0
			9220 10 0
		Amount (to be deducted) to be repaid to ENGLISH BRANCH COUNCIL	940 14 6
			8279 15 6
			<u>£9557 14 4</u>

Dental Association, 40, Leicester Square, London, W.C., March 7th, 1882." I will now refer to the record in the minutes of the Medical Council to which the communication from the British Dental Association refers. You will find it in volume XVI of the minutes, 1879, on page 147. It is a general statement of the examinations *sine curriculo* in England, Scotland, and Ireland:—"Candidates are admitted up to August by the Royal College of Surgeons in Ireland on the production of certain certificates if they have been in practice in Ireland for five years before the date of this application." This I need not say is April, 1883. After having read this is not unnatural to consider what is the state of feeling at the present moment among the most distinguished members of the Dental profession with regard to the examination *sine curriculo* for Dentistry. I am quite sure that I use no exaggerated language when I say that there is a very aggravated feeling among the Dentists of England in consequence of the persistence of these examinations *sine curriculo*. I have two private letters. I cannot read them for they are not intended for the public, but I shall be happy to show them to any gentleman who comes to me privately. Here is one of them:—"It is I believe the general opinion of competent judges that the value of the Dental licentiate-ship has been greatly lowered by the manner in which it has been granted in Ireland. Very few men go to Scotland where it can be obtained *sine curriculo*, while numbers go to Ireland. The facts speak for themselves. If the degree could be gained by equal knowledge men would go to the nearest place—Scotland."

Mr. MACNAMARA.—I respectfully submit, Mr. President, that we should have the name of that gentleman, or at all events, some information as to what knowledge he has of the way in which the examinations are conducted in Ireland.

Dr. STORRAR.—Well, I will go out of my usual routine. I ought not perhaps to be called upon for the name of this gentleman. It is a private letter. But it is Mr. Tomes.

Mr. MACNAMARA.—Mr. Tomes was never present at an examination in Ireland.

Dr. STORRAR (continuing to read the letter).—"I have but little to say respecting Ireland. But the matter has gone too far. Many of these licentiates are men of known ignorance. We memorialised you asking for an end to be put to this *sine curriculo* business—ask Mr. Miller for the minutes. Several persons, not content with the Irish M.D.S., went forward to the English college and were found to be sadly ignorant, and could not go through." Perhaps I have gone a little beyond what I ought to have done in reading this

private communication, but, being challenged by Mr. Macnamara, I felt that Mr. Tomes would excuse me for reading what I have done. I have no hesitation in saying that there is a sense of very great aggravation, and justifiable aggravation, among the members of the Dental profession, in consequence of the course which has been pursued by the Irish College. A table was put before us the other day giving a description of the examinations for this Dental qualification, and what do we find? The Royal College of Surgeons of Edinburgh and the Faculty of Physicians and Surgeons of Glasgow between them, examined sixteen candidates *sine curriculo* in 1882, and of these they rejected one half—eight. Now I turn to the numbers of the Royal College of Surgeons in Ireland, and what do I find? That no less than sixty candidates went over to Ireland—not the nearest place or the most pleasant place to travel to—to get an examination, and of these candidates forty-five passed and fifteen were rejected. Now of course I was not at the examination; if I had been at the examination I should not have been a bit the wiser, probably I should not have been able to judge of its merits, and, as Mr. Macnamara says, Mr. Tomes was not present. But really, I ask gentlemen who lay claim to common sense to look at this paper and ask themselves whether, *prima facie*, this is an aspect of affairs that is creditable to the College of Surgeons in Ireland, or beneficial to the profession of Dentistry in this country, of which profession we are the guardians? I do not wish to say anything severe against the College of Surgeons of Ireland. I wish that my words here should be measured, and that they should be above all things temperate; but I say that this is a condition of things which we, as guardians of the profession of Dentistry, ought not to allow to continue. It so happens that there are no Dentists on this board, otherwise the probability would be that the representative of the Dentist's profession would raise his protest against this; but I feel that, just for that very reason—that the Dentists are not here—we are the guardians of their profession. Having accepted the responsibility, we are bound not to turn a deaf ear to the representations of high class Dentists outside. I have considered what would be the best mode of meeting this case, and I consider that the best mode is the resolution which I have proposed:—"That after the month of December this year all examinations in Dentistry for Dental qualifications *sine curriculo* should cease and determine." The Act passed in 1879. It came into operation on 1st August, 1879. Surely by the end of 1883 all reasonable consideration will

have been shown to enable men who are already on the Register to get an examination *sine curriculo*.

Dr. FERGUS.—I second that without any remarks.

(*To be continued.*)

DR. W. R. HOLMES' METHOD OF DUPLICATING VULCANITE PLATES.

WHEN a plate is presented, it matters not how badly broken, so the pieces are all in hand, we unite the parts together with wax and model nicely; then mixing some plaster and pouring it into the lower section of the flask, press the plate into it, teeth looking downward. We let the plaster come up to the top of the rim above the gum and slope it off toward the rim of the flask. Varnish and oil are then applied to the plaster, care being taken that the palatal surface of the plate be kept free from varnish, oil, or plaster. The second section of the flask (we are describing the process with the use of Hayes' flask) being now placed in position, the plaster is mixed and poured in, and the flask carefully shaken until we are assured that every part of the plate is thoroughly covered. It is then allowed to harden perfectly. The vulcaniser is now filled half full of water, heat is applied, and when the water begins to boil the flask is put in the vulcaniser and the top again slightly screwed on. It is allowed to remain until it is thoroughly heated by a considerable amount of boiling. The flask is then quickly removed and rapidly, though carefully, separated; and as soon as this is done the rubber, which is now found in a semi-softened state, is pulled hurriedly, though with some degree of care, out and away from the gums and teeth. It usually yields from them as readily as gutta-percha base plates, and leaves the teeth intact and pins clean and nice for packing. If it does not yield readily heat again and remove as above described. After the old rubber plate is removed cut ways from excess of rubber, pack new rubber, bring flask together, vulcanise and finish in usual way. We have had such fine success by this method that we never attempt to mend a plate in the ordinary way—by drilling holes, dovetailing, &c., but always duplicate. We find it to require less time, is decidedly more satisfactory, and usually for fee we charge half price of a new plate. It is every bit as perfect as the original before being broken.

If a section of teeth is broken off we fit a new one in place, model with wax, embed in plaster, clean, &c., and proceed as above described.—*The Dental News.*

VERRIER'S CONTINUOUS GUM FACINGS.

WE have been requested to state that Mr. Verrier will give a demonstration of his process of manipulating his continuous Gum Facings for use with plastic cases (a totally distinct system from continuous gum work) with his little gas furnace, on Monday May 7th, at 4 p.m., at the Dental Manufacturing Company, 25, Broad Street, Golden Square, London, W., and another at Messrs. C. Ash and Sons, some time in June, the date of which will be duly announced.

We trust these are only the forerunners of others, as his beautiful process cannot be too widely known, and to see is to be convinced.

GLASGOW DENTAL HOSPITAL.—ANDERSON COLLEGE.

At a meeting of Committee of Management on the 11th ult., the following gentlemen were appointed Assistant Dental Officers in addition to Mr. W. F. Martin, L.D.S., previously appointed:—Mr. W. M. Adamson, L.D.S., Mr. D. R. Cameron, L.D.S., Mr. James M. Cash, L.D.S., Mr. B. Sutherland, L.D.S., Mr. A. B. Young, L.D.S.

ROYAL COLLEGE OF SURGEONS, EDINBURGH.

Mr WILLIAM J. MASON, of Exeter, having passed his final examination was admitted L.D.S. on the 29th of March.

VACANCIES.

GLASGOW DENTAL COLLEGE.—The office of Dental House-Surgeon is vacant. Applications to be addressed to the Secretary.

HOSPITAL FOR INCURABLES, MANCHESTER.—Honorary Dentist. Applications to R. Armistead, 11, Lever Street, Piccadilly, by May 1st.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 82, Mortimer Street, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
3. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
4. All communications relative to subscriptions and advertisements are to be addressed to the Publisher, Mr. J. P. Segg, 82, Mortimer Street, Regent Street, London, W.
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ANSWERS TO CORRESPONDENTS.

A MECHANICAL DENTIST.—You will not be entitled to recover fees for work done, and must therefore remain a servant to others.

Communications have been received from Messrs. Ash & Sons (London), R. Heney (Gipsy Hill), J. R. Brownlie (Glasgow), W. J. Mason (Exeter), Berks T. Hutchinson (Cape Town), J. Williams (Walsall), J. A. Biggs (Glasgow), H. C. Braun (London), — Heney (London), J. Williams (Walsall), Dr. D. Taylor (Glasgow).

BOOKS AND PAPERS RECEIVED.

'Lancet.' 'Medical Times and Gazette.' 'British Medical Journal.' 'Pharmaceutical Journal.' 'Report of the Exeter Dental Hospital.' 'American Journal of Dental Science.' 'New England Journal of Dentistry.' 'Southern Dental Journal.' 'Kingstown Dental News.' 'Dental Cosmos.' 'Deutsche Monatsschrift für Zahnheilkund.' 'Le Progres Dentaire.' 'Ohio State Journal.' 'Gionale di Correspondenza die Dentisti.' 'Des Indications Therapeutiques dans la Carie Dentaire.' 'Des Lois de la Dentition chez les Vertébrés,' par Magitôt. 'Extrait du Dictionnaire Encyclopedique de Sciences Medicales,' par Dechambre. 'Cape Progress.' 'Cape Mercantile Advertiser.' 'Cape Argus.' 'Cape Times.' 'Warrington Guardian.' 'Cape of Good Hope.' 'Government Gazette.' 'L'Odontologie.' 'L'Art Dentaire.' 'Norfolk Chronicle.' 'Edinburgh Daily Review.' 'Revue Odontologique.'

NOTICE.—We desire that it may be clearly understood that our pages are open to all for free expression of their views on matters connected with our profession. We only ask for terseness of expression and MODERATION IN TONE.

When otherwise unobjectionable, difference of political or other opinion will never be regarded by the Editor as a disqualification for the admission of any communication to the pages of the BRITISH JOURNAL OF DENTAL SCIENCE.

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VOL. XXVI.

DEVELOPMENT OF THE INFERIOR MAXILLA.*

By J. BLAND SUTTON, L.R.C.P., &c.

SENIOR DEMONSTRATOR OF ANATOMY, ETC., MIDDLESEX HOSPITAL.

CONCERNING the development of the lower jaw of man, many opinions have been expressed by anatomists of repute, who have inquired into the subject. Some of them maintain that it arises from two centres, one for each moiety; others assert the existence of several ossific nuclei. There is sufficient explanation why such diverse statements have gained currency, from the fact that earthy matter for the lower jaw is deposited very early in embryonal time, and the various centres tend to fuse so swiftly as to give rise to the false appearance of a single centre, whilst the embryo is yet very small. These circumstances combined render accurate observation anything but an easy task.

Recently, in the course of some investigations on the development of the skull, I have had occasion to look into the mode of origin of the maxillæ, which has led me to certain conclusions which I propose to lay before this Society.

Previous to detailing my own researches into this subject it will be well to give, as a prelude, a brief history of investigations directed upon the origin of this important bone.

So far as I am able to learn, Kerckring, more than two hundred years ago, in his celebrated "*Osteogenia Fœtuum*" (1670), was about the first to recognise that the coronoid process possessed an independent centre. He was fortunate in possessing a goodly number of fœtuses, and spared neither time nor pains in their study.

Later, Autenrieth described the lower jaw as arising from three or four centres, one each for the coronoid process, the condyle, and a piece for the horizontal portion and angle.

Spix, in his large work, '*Cephalogenesis*,' published in

* Read before the Odontological Society of Great Britain, April 2nd, 1883.

1815, gives a brief account of the observations of previous anatomists, and not only supports Autenrieth's statement, but adds a fifth centre—a thin lamella of bone, lying along the inner surface of the maxilla, remaining as a distinct ossicle up to the fourth month. This portion is often referred to as the "piece of Spix," but as it clearly represents the splint-like bone found along the inside of the complex lower jaw of reptiles and certain fish, named the *splénial*, by that term it will be referred to throughout this paper.

Meckel, in describing the ossifications of the lower jaw, appears to ridicule the notion of Spix, particularly concerning the *splénial* element, stating that the pretended line of demarcation is really due to the groove for the mylo-hyoid nerve. Later I will endeavour to show that this groove represents, in the most exact manner possible, the line of junction of the splénial with the dentary bone.

In the year 1821 a new interest attached itself to this region, in the discovery by Meckel of the singular rod of cartilage which bears his name. This structure was more fully described by Serres in 1822, under the name of "Maxillare inferieur temporaire." An excellent account is also given by Robin et Magitot, in 'An. des Sc. Nat.,' ser. iv, tome xviii, 1862. Although the Meckelian cartilage plays very little part in the development of the jaw, nevertheless it is a structure of very great morphological interest, and the modification of its proximal end has of late years occupied a considerable share of attention from several anatomists.

It was usual to state that the distal end of this cartilage atrophied, but the observations of Callender (published in 'Phil. Trans.,' 1869) go to show that the anterior extremity becomes ossified, forming what is termed the *Mento-meckelian* portion;—as this is a point of some importance it will be well to go into details somewhat. Meckel in speaking of the mandibular symphysis, clearly states, "sometimes between the halves of the inferior maxilla a single bone may be found, sometimes two ossicles, one on the right the other on the left, which ultimately fuse in the middle line." It seems to my mind that this corresponds exactly to the situation of Callender's mento-meckelian ossification of Meckel's cartilage. All that portion of the mandible anterior to the mental foramen arises in this manner.

Cruveilhier admits the existence of the *splénial* as a distinct bone, but observes that it fuses with the main portion of the bone much earlier than Spix states; my own observations accord with this.

Cruveilhier's description of this piece is very exact; he says:

"It is situated on the inner side of the maxilla, its posterior extremity forming the little spine marking the entrance into the inferior dental foramen, and affords attachment to the stylo-maxillary ligament."

A more recent anatomist, Professor Humphrey, considers the bone to arise usually from one centre, and that the occurrence of more than one centre is exceptional.

Renault and Rambaud, in their elaborate work, '*Développement des Os*,' 1864, not only describe five centres, but give the dates of appearance and fusion of the various portions.

Since this date I am not aware of any original observations on this subject, most writers contenting themselves by giving the opinions of some of the anatomists mentioned in the commencement of this paper. Consequently there was field for further inquiries into the matter.

Having given a brief *résumé* of opinions, let me now detail my observations on the subject. The examination of numerous specimens of human maxillæ from the sixth week onward, has convinced me that the lower jaw arises from six distinct centres of ossification, five of them answering exactly to those described by Spix, the sixth representing the mento-meckelian centre of Callender.

Taking Meckel's cartilage as a keel it is easy to raise around it a structure representing the lower jaw.

So far as I have been able to observe the dentary is the first to appear; from this centre the larger part of the body of the bone is formed. At first it resembles a shallow trough lodging the cartilage.

The nuclei for condyle, coronoid, and angle follow so rapidly that it is difficult to determine their order. About the same time osseous granules may be seen in the perichondrium surrounding the distal end of Meckel's cartilage, gradually invading its substance.

As soon as the various centres make their appearance, a thin network of osseous tissue quickly connects them. When this occurs, a thin shelf of bone will be found immediately above Meckel's cartilage and the inferior Dental nerve. This latter osseous streak lies on the inner side of the developing bone, quite distinct from the other centres, and represents the splenial. Now is the very best time to observe the various nuclei, particularly if the bone be rendered transparent by means of alcohol and oil of cloves. Its appearance is very striking. The bone presents the familiar shape of the fœtal jaw, but its texture reminds one of a spider's web, the various centres showing like flies entangled in the mesh.

The order of events may be arranged in stages, for the sake of clearness, thus :

1st. Meckel's cartilage appears.

2nd. Dentary is seen below.

3rd. Centres for condyle, coronoid, angle, and mento-meckelian.

4th. Network of osseous tissue connects them together.

5th. Splenial appears as ledge of bone supporting teeth.

6th. Disappearance of Meckel's cartilage from jaw, and fusion of splenial.

The splenial element is interesting on account of its relation to the developing teeth.

On the first appearance it stands out at right angles to the dentary, serving to separate the teeth germs from Meckel's cartilage. If at the fourth month of intra-uterine life the tissues on the inner side of the jaw be carefully dissected away, the splenial will be observed forming a distinct ledge of bone, supporting on its superior surface the dental follicles, like flasks upon a shelf; immediately beneath it runs Meckel's cartilage and the nerve. As the cartilage atrophies, the splenial extends downwards to fuse with the dentary immediately below the nerve; in this way the mylo-hyoid branch gets shut off from the main portion of the inferior dental nerve. After the fourth month it extends vertically to form the inner wall of the maxilla, all trace of its originally separate condition being thus completely lost, the bone then assuming the condition which it presents at birth, and with which we are all so familiar.

Let me now offer evidence of the compound nature of this bone of a different character.

In the year 1819 the celebrated French anatomist, Serres, propounded in a paper read before the Académie des Sciences, Paris, certain laws bearing on ossification; among them was one termed the '*Loi de conjugaison*,' by which he showed the various foramina in bones to result from the apposition of two or more distinct bones, or distinct centres of ossification. To this law there were many exceptions; among the more notable were certain foramina in the temporal bone, and the inferior dental foramina.

An excellent example of the law is the mode of formation of the anterior palatine foramen; the foramen in each superior maxilla is formed by the coalescence of the pre-maxillary with the body of the bone and the palate process; whereas the hiatus as seen from the hard palate, is formed by apposition of the maxilla of opposite sides.

When I first took up the subject of nerve foramina, Serres' researches were quite unknown to me, and I took as

my guide this rule: "*Whenever a nerve passes through a bone it marks the confluence of two or more ossific centres.*" Among the earliest bones to yield under this method of analysis were the temporal and inferior maxilla; later I became acquainted with Serres' paper, the greater part of which is published as a footnote in the French traduction of Meckel's '*Anatomie Comparée*, vol. iv.' Much to my satisfaction I found that my method had yielded far more satisfactory results, and had banished two of the apparently most obvious exceptions to the law; and it is most interesting to trace out the intricate pathways by which many nerves quit the cranial cavity in order to avoid piercing an ossific centre. Applied to the lower jaw the rule stands thus: the nerves concerned are the inferior dental, mental, and mylo-hyoid. The inferior dental enters by the foramen of the same name, formed by the coalescence of the coronoid, condyloid, dentary, angular, and splenial elements; the nerve then travels in a tunnel formed on the outer side by the dentary, and the inner side by the splenial. The mental branch passes out through a fenestra formed by dentary and mento-meckelian ossifications.

The mylo-hyoid runs in the groove which once lodged Meckel's cartilage, the sulcus also corresponding to the junction of splenial with dentary.

As the inferior dental passes along the canal it sends up twigs to the teeth, which twigs occupy foramina or spaces left between the splenial and dentary.

The relations of nerves thus lends additional help towards unravelling the mystery.

So far, the inquiry has been conducted from the standpoint of human osteology. What aid does comparative anatomy lend? My answer is, it sheds light of the purest kind.

Examine first a common dogfish: the lower jaw consists simply of a rudely-fashioned piece of cartilage covered with skin, bearing teeth. This cartilaginous bar articulates with the palato-quadrate arcade, and by means of a ligament is fixed to the hyo-mandibular cartilage.

Turn to the sturgeon. The mandibular cartilage persists, surrounded by an ossification representing the dentary; the anterior extremity of the cartilage is tipped occasionally by a small ossification representing the mento-meckelian, and a small angular ossification is present.*

The singular ganoid *Amia* possesses a very complex mandible.†

* Parker and Bettany, '*Morph. of Skull*,' p. 84.

† Bridge, *Amia*: '*Journal of Anatomy*,' vol. xi.

In this interesting fish Meckel's cartilage is present as a thin axial band, having a small ossicle at its distal end representing the mento-meckelian.

Splénial and dentary elements are met with on the inner and outer sides respectively. The articular portion is formed by the confluence of three distinct ossicles, angular and surangular being also represented.

In teleostean fishes not only is the lower jaw compounded of several distinct bones, but its suspensorium is complex also.

Choosing as an example the skull of the cod, a chain of bones is found, extending from the skull to the mandibular articulation, named from above downwards:—Hyo-mandibular, symplectic, and quadrate. The bones forming the mandible in the adult fish are reduced to three—dentary, articular, and a small angular; Meckel's cartilage persisting from the articular forwards to the symphysis.

I feel very suspicious that the remaining elements, mento-meckelian, supra-angular, and splénial are present also, but fused to the dentary; but inability to obtain embryos prevents me verifying my suspicions on this point.

The same elements can be traced through amphibian and reptilian maxillæ up to mammals. Once within the mammalian circle the complex mandible, so characteristic of creatures lower in the scale, disappears, and the entire series of mandibular bones is represented by the single bar of bone characteristic of mammals. The remarkable modification these parts have undergone renders homological interpretation difficult and uncertain.

More than forty years ago Reichert endeavoured to show that the auditory ossicles were the representatives in man of certain of the bones forming the suspensorium of the mandible of the fish. The subject was taken up in this country by Professor Huxley, who endeavoured to show that the quadrate and articular bones of the fish are the homologues of the incus and malleus. In the first place he considered the incus as representing the quadrate, and malleus the articular. This was in 1864. Two years later Peters of Berlin gave a new interpretation of the matter, which led Professor Huxley to reconsider the whole subject; the result of this reinvestigation is published in 'The Transactions of the Zoological Society,' 1869, in the well-known paper 'The Representatives of Malleus and Incus of Mammalia in other Vertebrata.' Here it is shown very conclusively that the representative of the quadrate bone in fish and reptiles is found in the malleus. This view has recently been confirmed by the observations of Fraser, in a communication to the Royal Society in 1882, on the 'Ossicula.'

This is an important point, for if the quadrate of fish, &c., is represented by the malleus in mammals, what has become of the various elements forming the complex mandible of the creatures below them? Is it not more than probable that they should be represented by distinct ossific nuclei in the lower jaw of man and mammals, judging from what is known with regard to the development of other bones forming the complicated human skull? Let a line be drawn through the articulation of the quadrate with the articular bone in the fish; such a line would correspond with the glenoid fossa of man's skull; then one would expect to find representatives in the two cases below this line, for there is nothing to point to arrest of parts.

The following table represents what I believe to be the homologies of the various centres and bones under consideration, where it will be noted that all bones on the inner side of the maxilla are considered to belong to the splenial; the bone termed surangular I hold to be homologous with the coronoid process of Anthropotomy, because it is situated to the outer side of Meckel's cartilage and the inferior dental nerve, thus corresponding in position and in its relation to the articular bone, as the coronoid of the human maxilla does to the condyle.

Homo.		Fish, &c.
Mento-meckelian	=	Mento-meckelian.
Angle . .	=	Angular.
Condyle . .	=	Articular.
Coronoid . .	=	Surangular.
Splenial . .	=	Splenial.
Dentary . .	=	Dentary.

Thus actual observation, reinforced by the application of theory, and rendered more than probable by appeal to comparative anatomy, support the view of the compound nature of man's inferior maxilla.

PAPILLOMA OF LIP.—Dr. Barling showed a papilloma removed by Mr. Pemberton from the upper lip of a man, aged sixty-two. It commenced two years previously as a simple wart on the skin of the lip, and gradually invaded the mucous membrane, and when removed was of the size of a horse-chestnut. There was no ulceration, induration of bone, or enlargement of glands in the neighbourhood. The microscopical appearances were typical simple papillæ.—*Brit. Med. Journ.*

CYSTIC TUMOURS OF THE JAWS, AND THE ETIOLOGY, GENERAL CHARACTERS, AND RELATIONS OF TU- MOURS.

By F. S. EVE, F.R.C.S.

ERASMUS WILSON LECTURER AND PATHOLOGICAL CURATOR OF THE MUSEUM
OF THE COLLEGE, AND SURGICAL REGISTRAR TO
ST. BARTHOLOMEW'S HOSPITAL.

(Continued from p. 407.)

LECTURE III.*

AT a time when the test of direct experiment is being applied for the elucidation of many of the complex problems of animal life and its modification by disease, it would be surprising if the mystery of tumour formations had not been attacked from the same direction. Although no conclusive results, yet some suggestive facts, have already been arrived at by this method.

In dealing with the subject it will be more convenient to consider, first, the changes which portions of normal tissues undergo when implanted into various parts of the bodies of animals; and, secondly, the results of the implantation of portions of tumours.

To John Hunter, the founder of this great museum, we owe the first facts with regard to the behaviour of implanted tissues. You are doubtless all familiar with the experiments by which he succeeded in transplanting human teeth and cock's spurs into the combs of cocks; I will therefore only remind you, in passing, of the remarkable growth of the spurs when transferred to this highly vascular soil.

Many other experimenters have been at work in this field, but it is to an exhaustive series of investigations by Leopold,† that we owe the more complete knowledge now possessed.

Van Dorremal, Goldzieher, and Zahn, found that portions of such tissues as the epithelium of the lower lip, of the conjunctiva, and of the nasal mucous membrane, grew to a slight extent when placed in the anterior chamber of the eye of animals, rabbits being generally used. Epithelium was also produced from the under surface of a portion of cornea implanted in the lymph sac of a frog.

* Given at the Royal College of Surgeons, June, 1882. The latter part of the Lecture, treating of the relation of tumours to each other, has been extended, but the conclusions have not been altered.

† 'Virch. Arch.,' Band xxxv, p. 283.

Leopold implanted into the anterior chamber portions of costal and epiphysals cartilage, and unstriped muscular tissue, from rabbits, either fully grown or half-a-year old, with the result, that in the fully grown animals not the slightest tendency, and in young animals only a trace of growth, was observed in the implanted tissue. I am, however, able to state, that portions of the intermediary cartilage, with the periosteum attached, of recently-born animals will increase to eight to ten times their original size, when transplanted into the anterior chamber; but they finally become reabsorbed.

Cohnheim and Maas sought to ascertain if portions of fresh normal tissues would grow and produce new formations within the blood-vessels. They inserted portions of the periosteum of rabbits into the jugular veins of dogs and chickens. These, lodged in the branches of the pulmonary artery, became vascularised in the same manner as a simple thrombus, and produced within two weeks first cartilage and then true bone. But these portions of bone began, without exception, to disappear with the next week, and after the fifth week not a trace of them remained.

The experiments on the transplantation of tissues from adult animals show, therefore, that fully formed tissues, such as cartilage, cornea, and nerve, are absorbed; but growth is observed when such tissues are used as periosteum, and the deep layers of epithelial surfaces, which more nearly resemble foetal tissues. Growth also takes place when tissues from very young animals are used.

Experiments on the transplantation of embryonic tissues were first performed by Zahn, and they have since been supplemented by Leopold's researches. Leopold used, in different groups of experiments, minute portions of various tissues from embryo rabbits, twenty-four, twenty-one, and seventeen or eighteen days old. The portions were inserted into the anterior chamber of the eye, the peritoneal cavity, and the subcutaneous tissue of rabbits. The best results were obtained when portions of cartilage were inserted into the anterior chamber; but growth also ensued, as a rule, when the same tissue was implanted in the peritoneal cavity. Minute portions of the epiphysial cartilage, when introduced into the anterior chamber, became adherent to the iris; from this structure minute vessels passed to the cartilage, and soon invested it with a delicate network. In one of the most favourable cases the implanted cartilage began to grow in eight days; and at the end of fifty days the cartilage had increased forty to sixty times its original size. By the ninetieth day the tumour filled the anterior chamber, and

was nodulated and tuberculated. By the hundred and twentieth day the tumour almost completely filled the anterior and posterior chambers, and had reached its greatest size. On the hundred and eighty-eighth day the animal was found dead from pneumonia, the portion of cartilage having increased three hundred times its original size. The implanted portion of cartilages became ossified to a greater or less extent, whether placed in the anterior chamber or in the abdominal cavity. Microscopic examination showed that the formation of bone and cancellous spaces took place in the same manner as under the natural conditions; and, in the portions examined, abundant evidence of proliferation of cartilage-cells was obtained. By the introduction of portions of embryonic cartilage into the pulmonary circulation Leopold obtained much the same results as those previously recorded by Zahn. Eight days after the introduction of four small portions into the pulmonary circulation, only two unaltered portions were found in the branches of the pulmonary artery. In another similar experiment, one cube of cartilage was found lying in a much thickened vessel; but in another portion of the lung the finest divisions of the pulmonary artery contained numerous minute grains and knobs of scattered particles of hyaline cartilage.

These experiments of Leopold's were undertaken in order to apply the test of experiment to Cohnheim's theory, that all tumours are derived from latent rudiments of embryonic tissue. As regards the congenital tumours the result is extremely favourable, for the greater power of growth possessed by embryonic than by adult tissue is distinctly demonstrated; but the perfect ossification of the implanted cartilage, also indicates its capability of development, and thus separates it from the elemental tissue of the tumours of later life, the chief characteristic of the majority of which is the imperfection of their power of organisation. This difference is also seen in other respects; in the most successful experiments the masses of cartilage had ceased to grow by the hundred and twentieth or the two hundred and fifth days respectively; and in another experiment the cartilage became reduced by absorption to one half the size it had attained, a phenomenon almost unknown in the history of tumour formations. We must, therefore, conclude that the continuous and destructive growth of the more malignant tumours, among which some forms of enchondromata may be reckoned, depends on some other property than their supposed embryonic nature.

Considering the favorable results obtained by the implantation of embryonic tissues, it might be expected, from the

supposed analogy of structure, that portions of tumours would also grow when transferred to the bodies of animals. But in spite of the greatest care and precaution exercised in performing the experiments, especially by Billroth, it cannot be said that the transplantation of a tumour has been satisfactorily accomplished. The small nodules, found in the lungs by Langenbeck and Follin, after the injection of cancer juice, were evidently due to embolism. Billroth's results were negative in three cases of inoculation of portions of tumours, chiefly cancers, from men to dogs; and in six cases in which portions of similar tumours were injected into the veins of dogs. He thinks that possibly better results may be obtained with sarcomata. After the injection of the juice of a medullary cancer of the upper jaw into the femoral vein, by Otto Weber, in sixteen days a mass of medullary granulations, of the size of a fist, consisting of small round cells, grew up in the wound. Finally, the tumour became necrosed and disappeared. The dog escaped and, therefore, no post-mortem examination could be made. The same results followed a similar experiment performed on a cat. The nearest approach to satisfactory results were obtained by Goujon. In one experiment, a small portion of an encephaloid tumour was placed under the skin of a guinea-pig. The animal died twenty-five days subsequently, and a knot, about the size of a pea, consisting of epithelial cells like those composing the encephaloid tumour, was found in the operation wound. The lymphatic glands were thickened, hard, and showed, on section, specks, which were found to be composed of epithelial-like cells. In another experiment, a deep ulcer with an everted edge, followed the injection of a substance of a tumour into the femoral vein. After cicatrization of the ulcer, small knots or tubercles remained. The animal escaped two months after the operation. Owing to the strong tendency to the formation of tubercle which guinea-pigs exhibit, even after slight injuries, the results of these experiments must be accepted with considerable hesitation. Zahn introduced particles of an enchondroma, from an old woman, into the anterior chamber of the eye, and into the circulation; but no growth ensued, except in one instance, when a small portion of cartilage in the lung was found to have increased. Negative results have also followed the transplantation of tumours from one animal to another of the same species.

The failure in all these experiments to produce a permanent tumour-formation, except perhaps in one of Goujon's experiments, may probably be referred to two causes. In the first place, a fully-formed portion of the tumour may

have been taken, for no growth might be expected to take place unless a portion of the advancing or growing part of the tumour were implanted. It is, however, also probable that a favourable condition of the tissues in which the growth is implanted is required, such as may be assumed to exist in the highest degree in advanced age. That the tissues and organs themselves possess a varying resisting power to the growth of pathogenic materials when introduced into the circulation is shown by the experiments of Grawitz. When various cultivated fungi, such as penicillium, were introduced into the circulation, he found that they affected different organs, in an inverse proportion to their nutritive activity. Those organs, such as the lungs and brain, which possessed the most rapid circulation and the highest nutritive activity, showed the greatest immunity from the fungus-disease, and were only affected by highly malignant forms. Perhaps the same resisting power is shown by the lungs to the formation of cancer; secondary deposits being found, not uncommonly, in the liver, kidney, and bones, while the lungs remain perfectly free, although the cancer elements must have passed through the pulmonary circulation in order to reach the organs first named. In such cases small fibrous nodules are occasionally met with in the lungs, which, like those in Langenbeck's and Follin's experiments on the inoculation of cancer, may be considered probably as cancer emboli which have not grown, but have given rise to a formation of fibrous tissue around them. The lungs, on the other hand, apparently offer more favourable conditions for the growth of sarcoma, as they are frequently the seat of secondary deposits in cases of sarcoma, of the bones.

The failure of all experiments to inoculate animals with tumours from man, or from other animals of the same species, stands out in remarkable contrast to the daily evidence we have of the auto-inoculation of tumours, either by transference of nuclei of the tumour-cells by means of the blood-vessels and lymphatic vessels to other organs, or by direct implantation. Direct implantation is frequently observed, as in case of cancer or papilloma of the peritoneum, secondary to disease of the ovary or Fallopian tube, and it occasionally occurs in cystic adenoma of the ovary. In a case of cystic adenoma of the ovary, which had ruptured, Mr. Knowsley Thornton found a minute cyst implanted in the peritoneum, which was an exact miniature of the tumour of the ovary. Sometimes a primary or secondary cancer of the peritoneum even extends through the lymphatics of the diaphragm, and affects the pleura, just as is sometimes observed in tubercle.

Sir James Paget quotes a case in which a tumour appeared in the abdominal walls in the course of a puncture, by which the abdomen was tapped for cancer of peritoneum. Mr. Cripps has recently described a case in which an ulcer, having the appearance of an epithelioma, formed on the inner side of the elbow of a woman, whose arm had, at this point, been kept for two months in constant contact, by means of bandages, with an ulcerated cancer of the breast. The precise nature of the ulcer, however, was not ascertained by microscopic examination.

(To be continued.)

ON REGULATING TEETH.*

By NATHANIEL TRACY, L.D.S. Eng., Ipswich.

MR. PRESIDENT AND GENTLEMEN,—It is not my intention to enter into a lengthened exposition of the subject of the regulation of teeth, but rather to state as plainly and concisely as I can the conclusions I have attained to as to the best methods of practice in this department of our profession.

The importance of the subject cannot be denied. The advantages of a good well-arranged set of teeth, as conducing to their usefulness and the greater probability of their preservation, as well as their effect on the appearance, must be acknowledged by all. The latter consideration, the effect upon the appearance, especially as it affects the gentler sex, should not be lost sight of, as the expression, natural and becoming to a face, may be marred if the teeth are either allowed or caused to protrude, or to be unfairly contracted. So that it is very necessary, in the consideration of the course to be pursued in the regulation of the teeth, to consider their position, not in relation to the oral cavity alone, but also their effect on the fair proportions of the face.

With regard to the usual irregularities, I shall broadly and simply divide them into two great divisions—malposition of the teeth in fairly developed maxillæ, and malposition and defective antagonism of teeth consequent on irregularities in the development of the maxillæ.

The treatment of the first class must depend on the period which the case comes under our notice; early attention to

* Read before the Eastern Counties Dental Association, at the Annual General Meeting, held at Ipswich on the 11th April, 1883.

directing the incisors into proper position will often prevent much future trouble. And here I would oppose the practice of removing the contiguous teeth, but would rather at once attempt to expand the arch to give room for the permanent teeth, unless the considerations previously mentioned indicated advantages to be gained by the contraction. Should it be necessary to use mechanical means, I prefer to make the plate of rubber, vulcanised on a tin model to ensure sharpness of fit, with metal biting surfaces struck up to fit opposing bite when they are required to be worn for any length of time, or entirely of metal when the case is more complicated. When the correction required is to advance any of the teeth, I give the preference, if only one or a few are affected, to the use of a spring formed of gold wire with a free end. But when the alteration extends to many, I have found a bar fitted to the plate and extended in front, to which elastic rings can be secured, a very convenient form, and rapid in action. When isolated teeth require to be retracted, I use elastic rings attached to the plate, with, if necessary, springs to give direction; but where the front teeth generally require that treatment, I have found a loose bar fitted to the teeth, and secured to the plate by elastic rings, bring them into position very easily, afterwards retaining them by a fixed bar. A common defect we meet with, is where the cuspids are made to protrude by their proper space being filled up by the bicuspid. Usually, if the first permanent molars are affected by caries, as in most cases they are, their removal will remedy the mischief. But in these cases, I usually defer their removal until the second molars are fairly antagonised. Should the bicuspid prove obstinate, and resist the pressure of the cuspids, they can then be retracted by elastic bands fastened to a plate carried by the second molars. But should the teeth be all healthy, I should remove the first bicuspid to give immediate relief, but should then prefer to treat the opposing teeth symmetrically, unless there should be a special indication for a different policy.

The other class of cases of defective development of the maxillæ, shown principally in the contracted upper maxilla, I have corrected by the expanding plate. This I usually make with a gold spring. The very fact of increasing the width, often allows the pressure of the lip to flatten the arch in front. If not, it is easy, after having obtained the space by the expansion, to draw them into position by the loose bar, as before mentioned, afterwards retaining them by a fixed bar.

Another defect is sometimes caused by the want of deve-

lopment in the ramus of the lower jaw causing the inferior incisors to strike closely against the superior and force them forward. This I have corrected by a plate fitted to the temporary molars, so as to prevent antagonism in the molars of the permanent set; at the same time leaving the superior incisors free from any pressure of the plate. As the permanent molars elongate, if the superior incisors are not retracted by the muscular action of the lip, I use the band as in other cases.

THE ACTION OF CREASOTE.

By Dr. WM. H. ATKINSON.

THE following questions were written upon a slip of paper and handed to me with the request that I make a reply to them:

“Why is so powerful an escharotic as creasote applied to an exposed dental pulp?”

“How is it that the theory of return of tissue to the medullary condition can explain creasotic action?”

“Can it explain such action?”

“Should you expect retrograde action of healthy pulp-tissue after a caustic?”

“Will unhealthy (congested) pulp-tissue act in the same way?”

“State the differences between scar-tissue and coagula of albumen?”

In the attempt to show the principles involved in these questions, I have written what follows.

Anything like an intelligent reply to these queries involves an understanding of the organisation of functioning bodies. Every form of body the origin of which we have traced takes its rise from a cloud-mass of indistinguishable substance—*i.e.* a mass, any part of which is like any other part, so far as sensible proof is concerned.

How substance is endowed with capability to take on the various forms of elemental and composite bodies, and whether this capability is able to respond only to impact of organising energy, or is self-controlling, are questions the correct answers to which will reveal the methods of involution and evolution.

Metamorphism involves simplicity, duplicity, and complicity of change of constitution in bodies.

Classifications of bodies must be apprehended to enable us to define the limits and mergences of these in producing, maintaining, and reproducing the bodies we relegate to the *mineral, vegetable, and animal "Kingdoms"* of the classifiers of natural bodies. Classification is not complete until a common basis or origin for kingdoms shall have been taken into the scheme of production of the individual body of which the classes and divisions of class are composed.

Mineralisation, vegetalisation, and animalisation are expressions denoting the act of bodies *becoming* mineral, vegetable, or animal in character of constitution; the types of which must be known, to enable the observer to distinguish them.

It is the invariable habit of inquirers to ask *why* changes observed occur. It will be more profitable to ask *how* they come to pass, which will lead to closer observations of the changes coming within the range of sensuous perception, and teach us that *cause* lies behind perception, and suggest still finer modes of consciousness, aggregations of which constitute defined *perception*.

Intellect and affection (emotion) constitute the mind. They are both involved in every act. But attention usually is given to one or the other aspect or side of the act, thus seemingly separating them as distinct and independent acts; while they are but the *pre-dominant* and *sub-dominant* aspects of mental activity. In the same manner we are in the habit of giving our attention to mass-action, in changes of place or condition of bodies under observation, instead of considering the molecular change whose aggregation constitutes the perceptible change in visible bodies no less than the imperceptible in visible and invisible bodies, the behaviour of which indicates the occult changes to the reasoning faculty of mind.

The factors of nutrient and reconstructive change are the measures of combining power traceable to atoms. These measures are called bonds of affinity, and have been said to vary in number in the different elemental bodies known as atoms. When one bond is engaged in combining, the atom is said to be univalent; when two, bivalent; when three, trivalent; and so on to septivalent. It will be readily seen that the changes of molecular constitution may be very complicated, when all the bonds belonging to the different atoms necessary to compose albumen are called into play as alternately active and sleeping bonds.

The formula of albumen is set down as C, 53; H, 7.1;

N, 15.5; O, 22.1; S, 1.6, thus making a very composite molecule, endowed with an almost unlimited facility of change in combination. When any other atom or molecule holding stronger affinity for any bond in any element in it than is maintained among themselves as now combined in the molecule of albumen, a new combination is set up. The formula of creasote is set down as follows: C, 14; H, 8, and O, 2, making a much less complicated body known as the molecule of creasote, composed of C, H, O, in different combination. The query now arises as to the mode of action of the bonds in the molecule of creasote when it is brought within the sphere of influence of the molecule of albumen.

Does each molecule act upon the others as a single body with the combined strength of all the bonds of its atoms; or do some of the measures of affinity leave their old mates and unite with new ones more to their liking in the molecule? If they do so unite, old molecules must disrupt and new ones form in the change. If carbolate of albumen be correct nomination, then a new body must be formed in which the whole number of bonds enter, and thus disruption of the albumen and creasote will occur, to the extent of the formation of the new molecule of carbolate. In this case we have a pellicle of carbolate inclosing the unchanged albumen belonging to the pulp, or other body holding albumen, thus limiting the extent of the new body.

The next query is as to the character of nutrient activity in the mass of albumen thus protected from outside influence by the pellicle of carbolate. Any pellicle not soluble in an excess of its parent molecules, acts to the mass it protects as a chorion and amnion, protecting the embryonal mass which forms out of the enclosed pabulum, thus laying the foundation of normal nutrition or of reproduction of tissue of the territory.

Analysts do not agree in the number and proportion of elements composing proximate principles, or as they are called proteinaceous bodies. Albumen is one of these, and has been variously formulated. Were it of uniform composition, we might hope to arrive at definiteness as to its behaviour in the presence of bodies capable of effecting changes in its constitution, or destroying it as a molecular body. Creasote in full strength has but feeble escharotic power upon it (albumen) in some constitutions, while in others it makes a considerable eschar.

In illustration of this difference of action of a medicament under varying circumstances, I will cite the following case:—I had been using eucalyptol in full strength without its manifesting any escharotic power, until it was applied in a

case of abscess on the palatal root of a superior molar, caused by excessive tobacco-smoking. I forced eucalyptol through the root into the sac until I saw it ooze out through the fistula in the gum-tissue; and before the patient left the chair there was abundant evidence of coagulation of albumen in the tissues at the opening of the fistula. I queried whether the nicotine from his smoking had not so operated upon the membrane as to leave it in such a low grade of vitality that it became subject to an escharotic effect from so mild an agent as eucalyptol, which has no such action on normal tissue. I certainly attribute its unwonted activity in this case to the lowered condition of the vasomotor system of nerves by the action of the nicotine in the tobacco smoked by the patient.

In different degrees of attenuation creasote acts as stimulant, tonic, antiseptic, and depurative. In watery albumen it may be so attenuated by reason of solution, in different degrees, in the water present in the thin and poor albumen of flaccid, strumous habits of body as to present us with these three modes of activity. When acting as a stimulant it simply accelerates the normal molecular nutrient changes by its presence, without disruption of the molecules, and hence is evanescent in action. When it enters into the molecular mass, and is itself disrupted as a molecule of creasote, and at the same time necessarily disrupts some of the albuminous or proteinaceous molecular mass, it becomes a tonic, and we then have normal tissue of the part as the result. When retrogressive nutrient change has progressed to the degree of resolving the tissues involved back to the embryonic, or indifferent, or myxomatous corpuscular condition, we have what is known as the first stage of inflammation of the part. Now, if the reversal of nutrient currents that produced the inflammatory process be continued, we will have the formation of pus in the locality. Pus is nothing less than blood, fluid and corpuscular, deprived of the power of building tissues according to the demands of type. Pus is a bland, non-irritating body, and therefore negative to nutrient currents. In case retrogressive change is further induced by any impact of deteriorating energy, we may have disruption of pus, which changes the pus to sanies. Just at this point antiseptics interrupt the retrogressive process, and the sanies and pus may absorb, and the tissues return to a healthy condition. But if adverse impact be continued or repeated after sanies has been produced, the next grade of disruption results in the production of ichor, which is a chemical solution of blood and other tissue, from which the tissues can never be resurrected. Ichor must be

got rid of, or lasting mischief or death will follow. In case of restoration of tissues from the inflammatory process, we have the new structure made up of what is known as scar-tissue. Scar-tissue, like albumen and other animal primates, is of many degrees of nutrient endowment. First class scar is scarcely distinguishable from original formation. In such bond of union the connective tissue is traversed by nerves and blood-vessels, thus rendering it able to perform so nearly the functions of normal structure as to be indistinguishable from it. Second class scar-tissue is poorly endowed with vessels and nerves, and is therefore weaker in function than the normal or original tissue. Third class scar-tissue is made up principally of fibrous connective tissue, poorly supplied with vessels and nerves, or nearly devoid of these, and therefore only capable of a low exercise of the functions of statical tissue—such as sheaths and tendons. There is a condition of tissue which results upon the use of stimulants, (C, H, O), which is a sort of compromise between scar and normal tissue, viz., a deposit of fat of a poor quality, such as seen in beer drinkers and users of other alcoholic beverages. Those who take their liquor “straight,” as they say when they drink it without dilution, do not become fat as do those who largely dilute the alcohol, as with sugar and water, and in beer, &c. The alcohol molecules in these cases permeate the whole mass of soft tissues, and stimulate the parts to high functional activity, which prevents the formation of fat by the breaking up of the alcoholic molecule to produce fat. This fact having been often noticed, gave rise to the statement that alcohol was incapable of conversion into tissue at all. The nitrogenous compounds are least stable of organic molecules, and therefore most readily interfered with by the aldehyde group, which is the basis of the alcohols and other carbo-hydrates, which are the supporters of the slow combustion by which nutrient changes are effected.—*Dental Cosmos*.

THE NEW BARONET.—It is announced that her Majesty has been pleased to confer the honour of a baronetcy on Mr. T. Spencer Wells in consideration of distinguished services rendered by him to his profession and to humanity. This honour to the President of the Royal College of Surgeons, and one of the most distinguished members of the medical faculty, is regarded by his brethren throughout the country as having been worthily bestowed and thoroughly merited.

British Journal of Dental Science.

LONDON, MAY 15, 1883.

A BATTLE has been fought, whether to be regretted or not, the coming generation will find out. The General Medical Council has ruled that all persons whose names are on the Dental Register shall be entitled to present themselves for examination *sine curriculo* for the Dental license. With this resolution the gravest responsibility is cast upon the different examining bodies. Whilst claiming the right to break down anything that should in itself be a monopoly, we are ever aware of our duty to look after the public good, and in putting forward our wish that every member of the profession should be qualified, we unhesitatingly demand that where a degree is granted it should be done with every regard to the fitness of the person to assume the title. Just a year ago, in our issue of May 1st, 1882 (page 441) we wrote :

“ We would have no limit of time for the examinations, *sine curriculo*, but we would have *no distinctions* in the examination itself. We would allow any man of reputable character who is *on the Dentists' Register* to gain his knowledge how and when he chose, but were it possible we would not have his examiners know whether he came before them with or without curriculum. We would have them pass him only on his merits.”

And our opinions are unchanged. If by the publication of a degree the world is led to believe that the practitioner is in a position to perform all the operations in Dental Surgery with an amount of skill superior to one without it, we are prepared to support it ; but, on the other hand, should that degree be granted upon an indifferent examination, no expressions are too strong in condemnation of such a practice. It would be a fraud upon public confidence.

The argument that the best man will come to the front must never be taken for good reasoning, for although personal application will do much to ensure success, a thorough

course of training will do more. We are aware that until recently the L.D.S. degree was but little sought after, and the preparation for practice obtained without the attendance of lectures at certain places, was more convenient to the majority. As the law now stands, no one entering the profession will be allowed to practise unless he is possessed of the L.D.S. degree, and we trust the Medical Act Amendment Bill will place the examinations in Dental Surgery upon the same footing with Medicine and Surgery. All should have the same chance of doing good work by the sanction of the State; the inducement to young men to commence practice with a minimum of knowledge should be withheld, for as we have said, it is the public who look to us for help and bear the results of our labours.

Manipulative Miscellany.

All instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month, they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits, and without any intention or wish to pit one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

NEW GAG AND MIRROR COMBINED.

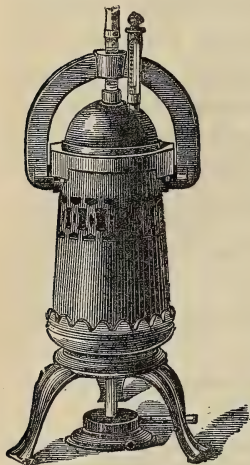
THIS invention whilst not claiming to be entirely new throughout, is the combination of two very useful contrivances, and as such, worthy of our attention. The gag consists of the ordinary spring cylinder with piston, surmounted at each end with vulcanite blocks, and the mirror a three-quarter inch circular glass reflector is attached to ball-and-socket joint. It is joined to the gag by means of a clamp which encircles the cylinder, and has an upward, downward, and horizontal movement. With the addition of the ball-and-socket joint every position can be obtained for the mirror, and for viewing obscure cavities or reflecting light with both hands free it will be found very serviceable.

We are indebted to Mr. H. C. Braun for this addition to the

Dental cabinet, and have confidence in recommending it to the profession.

ONE-FLASK VULCANIZER.

MESSRS. ASH AND SONS have just introduced a wrought copper vulcaniser, to hold one flask, which is estimated to bear 1000 lbs. to the square inch, and adapted for use with gas or spirit. It is extremely useful for single cases, very convenient to those Dentists who have a travelling practice, and all that can be desired for strength, safety, and finish. It stands fifteen inches high and weighs eighteen pounds.



We take the opportunity of mentioning that the shades of teeth—thirty-six in number—manufactured by this firm, are most conveniently arranged on strips of nickel plate in such a way that five appear one above the other, and yet each being on a

separate strip of metal can be so brought to the mouth as to facilitate the most delicate matching. Each set of five teeth is fixed to a ring, and these to a larger one, so that any series of shades alphabetically named may be used independently of the others.

Literary Notices and Selections.

CASE OF PERIOSTITIC ABSCESS OF LOWER JAW, WITH SPONTANEOUS HÆMORRHAGE; LIGATURE OF COMMON CAROTID; DEATH.

JAMES W—, æt. 53, baker, was admitted 13th January, 1883, to the Western Infirmary, Glasgow, on account of a sinus on the right side of the neck, leading down to a cavity surrounding the angle of the jaw, which was denuded of periosteum. There was also an opening communicating with

the mouth, and from both a very foul discharge escaped. In the month of August last, on account of severe toothache, the backmost tooth on the right side of the lower jaw was extracted by a Dentist. This was not, however, attended by any relief to the symptoms, as the pain continued very severe, and soon afterwards the right side of his face began to swell. Fomentations were applied without benefit and at length an abscess formed. This was opened first from the mouth, and latterly externally, and on both occasions a large quantity of pus was evacuated. Neither sinus healed, and, as the condition was getting gradually worse, he came into hospital. On admission the abscess cavity was thoroughly cleaned out, a drainage-tube inserted and fomentations applied.

15th January.—About 1 p.m. Mr. Goff, house surgeon, was suddenly called to see him as he was bleeding profusely from the neck. On examination it was found that the bleeding was from one of the branches of the external carotid, but the relationship of parts was so much obscured by the swelling that it was quite impossible to determine which vessel was involved. The external wound was enlarged, but, as the bleeding point could not be reached, the cavity was firmly plugged, and Dr. Buchanan was sent for. On his arrival the cavity was freely opened in all directions, but as it was quite impossible in the sloughy state of the surrounding tissues to discover any bleeding point, the common carotid artery was ligatured in its continuity. Soon after recovering from the effects of the chloroform the patient expressed himself as feeling well and comfortable. In the evening, except that the affected side of the head was considerably colder than the other, nothing noteworthy was remarked.

17th February.—The ligature of the carotid has produced very little disturbance, and has been well recovered from ; but there is no improvement in the local condition, and the patient has been gradually losing flesh and becoming weaker. There has been all along, both from the external wound and into the mouth, a profuse discharge of very putrid pus—one of his greatest troubles being that he is forced to swallow some of this when taking his food.

19th.—This patient is perceptibly getting weaker, and now, although latterly he has been taking nothing but brandy and milk, he cannot even manage this, as it is almost impossible for him to open his mouth. For the same reason, too, it was found impossible to pass a tube into the stomach. His breath and the discharges from the wound have a very offensive odour.

22nd.—At 1.45 a.m. this morning he died from exhaus-

tion, due apparently in great part to his inability to take food, and to his swallowing the putrid discharge.

A post-mortem examination was made by Dr. Coats, of which the following is a note:—"The body is emaciated. There is an elongated wound extending from just behind the lower extremity of the ear obliquely, downwards and forwards, to about an inch from the middle line, and measuring altogether about four inches. The wound is united for about three quarters of an inch in the lower part of its course, but elsewhere it communicates with a ragged suppurating cavity. Nothing definite can be made out as to the state of the vessels in the wound, owing to the decomposition and sloughy condition of the parts. The heart presents nothing remarkable. The left lung is non-adherent. At the extreme lower part of the upper lobe there is an abscess, about the size of a hazel nut, filled with a creamy pus. Otherwise this lung is normal in appearance. The right is somewhat adherent. Towards the base there are several softened yellowish areas having the characters of gangrene of the lung. Otherwise the organ is generally oedematous. The spleen is normal; the kidneys are normal in size, and although the capsules are somewhat adherent, their tissue is not otherwise remarkable. The liver presents well-marked fatty infiltration, and weighs forty-seven ounces. There is considerable oedema of the membranes of the brain, and the following is the condition of the circle of Willis and arteries at the base. The right vertebral artery is of very insignificant size as compared with the left—not more than one eighth of its size. The posterior communicating artery of the right side is not more than a third of the size of the left. The internal carotid, where cut across in the brain, is of equal size on either side, as are also the anterior and middle cerebrales one each side. The anterior communicating artery is not larger than normal.—*Glasgow Medical Journal*.

COMPOUND FRACTURE OF THE INFERIOR MAXILLA.

Case reported by GURNELL HAMMOND, L.D.S. Eng.,

DENTAL SURGEON TO THE NATIONAL DENTAL HOSPITAL.

J. H—, æt. 22, presented himself at the National Dental Hospital with a fistulous opening beneath the symphysis of the lower jaw, from which a copious discharge of pus was escaping. He gave the following history :

Three weeks previous he had an epileptic fit in the street, and in his fall he struck his chin violently against the pavement. Upon recovery he found he was unable to close his mouth completely, as the molars were articulating in an unnatural position. He was taken to the Hospital for Epilepsy, where the wound was dressed, and he was treated for epilepsy. He stated that no further notice was taken of his jaw, as they thought the injury simply amounted to a cut. About three days after pus commenced to flow, which continued in considerable quantity up to the time he appeared at the Dental Hospital. He had suffered considerable pain, and was unable to masticate his food.

My colleague, Mr. F. Henri Weiss, saw the case and diagnosed it as a unilateral dislocation with possible fracture of the inferior maxilla, and as one day would not materially affect the case he ordered the man to call the following day to see me. After careful manipulation I found a fracture existed, and with a silver probe passed through the fistulous opening distinctly felt the sharp edges of bone. There was not much crepitus, owing probably to the time that had elapsed since the injury, lymph having covered the surfaces. I prepared an impression tray, and filled it with very soft Stent, and with care obtained a model of the teeth. As most of the teeth were standing and free from periostitis, I thought it a very simple case to apply my wire-splint.

I recommended the patient to poultice the chin and call at the hospital in two days' time. I applied my splint in the same way as described in Bryant's 'Surgery' and other works, obtaining perfect steadiness of the two halves, the fracture having taken place a quarter of an inch to the left of the symphysis. An attempt was made to reduce the dislocation, which after considerable difficulty was successful, although the mobility of the jaw was anything but what could be desired. Whether the man feared causing himself pain, or the glenoid cavity had become filled with synovial fluid, I cannot say, but the condyle was well in its place, as could be proved by digital examination, the hollow before the ear being filled with a hard, movable mass, which was synchronous with the jaw. The wound was covered with a carbolised oil pad, and directions given to apply warm water twice daily.

I saw the patient two days after, and found the splint somewhat loose, so tightened the wires and put in those which I had left out, as in most cases it is necessary to tie between fifteen and twenty separate pieces of wire before the splint is finally adjusted. The distress caused by handling the fractured jaw so much is obviated by putting those wires

only which will bring the parts together, say ten or twelve, and the remainder left until the next visit. By this means, if any alteration is required in the arrangement of the splint, it can be done without difficulty.

I did not find any unfavorable symptoms during the further treatment. The discharge gradually ceased, and the wound healed in three weeks. The mobility of the jaw became thoroughly established, and seven weeks after the splint was applied it was removed with all the evidence of a sound union, mastication being accomplished with perfect comfort

THE SPEED OF THOUGHT.

WE have several times given the readers of the journal a report of what has been done by scientists to determine the rate at which nervous influence is transmitted through the telegraphic system of our bodies. Some recent investigations on the subject are thus summed up in the 'American Journal of Arts and Sciences:'

Sensations are transmitted to the brain at a rapidity of about 180 feet per second, or at one fifth the rate of sound; and this is nearly the same in all individuals.

The brain requires one-tenth of a second to transmit its orders to the nerves which preside over voluntary motion; but this amount varies much in different individuals, and in the same individual at different times, according to the disposition or condition at the time, and is more regular the more sustained the attention.

The time required to transmit an order to the muscles by the motor nerves is nearly the same as that required by the nerves of sensation to pass a sensation; moreover, it passes nearly one-hundredth of a second before the muscles are put in motion.

The whole operation requires one and one fourth to two tenths of a second. Consequently, when we speak of an active, ardent mind, or of one that is slow, cold, or apathetic, it is not a mere figure of rhetoric, but an absolute and certain fact that such a distinction, with varying graduations, really exists.

The method by which these nerve motions are measured is thus described:

If a cylinder divided into 360° be caused to rotate 1000

times in a second, it is evident that the passage of one of those degrees before a given point is equal to the 1,360,000th part of a second; this may be divided by a microscope, so that a period of time equallying the ten millionth, or even the one hundred millionth, part of a second may be measured. By this arrangement it is possible to measure the rate of nervous impulse. Suppose an electric shock be given to the arm; it produces a sensation and a contraction of the muscles, then, by noting the interval of time between the shock and the contraction of the muscles, the time occupied by the action of the brain to produce the contraction, however quick, will be ascertained. By trying this experiment on various parts of the body, the amount of sensibility of the different leading muscles may be determined. —*Boston Journal of Chemistry.*

THE TEETH IN DIABETES.

DR. MAGITÔT has after an examination of many diabetics, come to the following conclusions:—First, examination of the mouth of diabetics furnishes a constant symptom of the disease. Second, this symptom is a lesion of the alveolar border, which may be designated as an alveolar osteo-periostitis. Third, this manifestation appears at the outset of the disease, persists during its course, and can, in consequence, be considered a pathognomonic symptom. Fourth, this alveolar affection, considered as a symptom of diabetes, presents three periods. Its first period is that of simple deviation of the teeth. Its second period is that of loosening of the teeth and alveolar catarrh. Each of these periods is in relation to the phase of the constitutional disease. The third period, that of the falling out of the teeth, corresponds to a more advanced state of glycosuria. Beside this last symptom there may occur, if the patient lives long enough, an osseous resorption, which may, or may not, be consecutive to a gangrene of the gums. The appearance of this latter complication is evidence of a critical stage of the disease, as it ordinarily ushers in its fatal termination. The value, as a symptom, of the first stage of dental changes, remains to be determined. It must be obvious, however, that it can only occur in the more chronic forms of glycosuric diabetes. *Exchange.*

A CASE OF PNEUMONIA CAUSED BY A TOOTH IN THE BRONCHUS FOR FIVE DAYS; RECOVERY.

DR. T. R. CHAMBERS, of East Orange, N. J., relates in the 'Medical Record,' November 19th, 1881, the case of a lady, aged thirty-five, who, on August 19th, had thirteen teeth extracted from the upper jaw at one sitting. Upon discontinuing the administration of gas (nitrous oxide) she fainted. Then she was seized with severe epigastric pain, urgent dyspnœa, cough, nausea, and prostration. It was several hours before she could be removed to her home in Orange.

On the fourth day the dyspnœa, nausea, and cough continued, and in addition there was severe pain in the left axillary line on a level with the nipples, at which place there was a zone of bronchial breathing and voice, and dulness over a space not larger than a silver dollar. In the neighbourhood were mucous râles. This consolidation was preceded for two days by pulmonary congestion. Sputa scanty, serous, and muco-purulent, streaked with blood. Temperature 102° F., respiration 40, pulse 102.

The next day the temperature was 104° F., respiration 38, pulse 110.

On the sixth day (August 24th) at 9 a.m. there was severe coughing with urgent dyspnœa (the patient says she "thought she would be suffocated"), terminating with a spasm and vomiting, after which relief was obtained. In the matter coughed up and vomited was found a second molar tooth. It was positively certain that it did not come from either jaw at this time, as both had been carefully examined since the illness begun. Blood was abundant in the sputa, which was muco-purulent in character. Cough very much easier. The whole lower lobe gave bronchial breathing and voice, with dulness. Temperature 104° F., respiration 44, pulse 124 (two hours after the coughing struggle).

On the seventh day the patient was generally easier. Sputa copious and blood-streaked. Temperature 100·5° F., respiration 22, pulse 100.

On the tenth day prostration was marked. Copious sweats. Blood disappeared from sputa.

September 19th (one month).—Patient up and about. Vesicular respiration returned to lung. Râles abundant.

September 25th.—Patient well, except weak.

The case should serve as a warning to those extracting

teeth to be careful to remove entirely from the mouth any tooth or part of a tooth loosened from its bed in the jaw.—*Medical and Surgical Reporter.*

GELSEMINUM SEMPERVIRENS IN TETANUS.

By JOHN B. READ, M.D., Tuscaloosa, Alabama.

EARLY in September, 1880, I was called to see a strong, healthy mulatto woman, aged twenty, who was suffering from well-marked tetanic convulsions, caused by a broken bit of glass, on which she had trodden two days previously, and which was embedded in her heel.

I administered chloroform to enlarge the wound and search for the broken glass. It was impossible to anæsthetise her profoundly, and her foot was forcibly held by strong assistants while I made free incisions, but failed to find the fragment of glass. The wound was then filled with morphia and a common poultice applied; and a cathartic was given, which acted promptly.

Knowing well the inefficiency of chloroform, chloral, and opiates in tetanus, I determined to try the effect of the gelseminum sempervirens, because of its well-known power of relaxing all voluntary muscles. I therefore ordered twenty minims of fluid extract of gelseminum every two hours, alternating with the same quantity of liquor potassæ at the same intervals. There was great difficulty in deglutition; but milk and soups were taken in small quantities frequently.

On the morning of the second day there was a slight improvement in the rigidity of the jaw, and the general spasms occurred only every three or four hours. But, as the day advanced, the jaw became more rigid, and there were violent and painful contractions of the muscles on the front and back of the chest. The general spasms also became more frequent, and sometimes occurred during sleep.

The dose of gelseminum extract was then increased to forty minims every two hours. During the third day, there was a marked improvement in both tonic and clonic spasms; the medicine was continued in forty-minim doses. By the close of the fourth day the rigidity of the jaws was almost entirely relieved, and the general spasms recurred at longer intervals,

and with diminished violence. After this period the improvement was rapid and regular, and the dose of gelseminum was reduced to twenty minims, at which it was continued till full convalescence. No remedy of any potency was used after the first six hours but the gelseminum, and there can hardly be a doubt that the cure was the result of its use. The extract was fresh from the laboratory of Tilden and Co., and was given for a week in amounts closely approximating half an ounce to an ounce every twenty-four hours; it produced no other sensible effect than that of controlling the spasms and arresting the disease. There was no dizziness, no dimness of sight, no double vision, and no prostration of strength, as I have seen in other patients with other diseases from much smaller doses of the same preparation.

So far as I am aware, this is the only instance, in the records of medicine, of the use of gelseminum in the treatment of tetanus, and the result here is certainly encouraging.

As the gelseminum exerts such powerful control over spasms of the voluntary muscles, I would advise its use in hydrophobia, and I would suggest that it be used hypodermically, whether in tetanus or in hydrophobia.—*British Medical Journal*.

BROKEN TEETH RE-UNITING.

DR. A. COLTON, of Hudson, N. Y., in writing to the editor of 'Items of Interest,' gives the following interesting case:

"In the summer of 1874, eight years ago, a blacksmith from a town near by, received a blow in the mouth from a piece of iron which he was trying to straighten on an anvil. The crown of the upper left lateral was broken off at the edge of the gum and fell to the ground; the crown of the lower left lateral was broken diagonally from the edge of the gum on the front side to below the gum on the inside, and turned into the mouth, the gum still adhering to the crown. An hour or two later I placed that crown in position and fastened it in place by means of fine wire around an adjoining tooth, and it re-united and is apparently as strong as ever. A few days since I filled a small cavity in the same tooth, and it still retained its original colour. Cases of this

kind are so rare it may not be uninteresting to mention it, as the tooth is still to be seen."

Beale's theory that "the teeth are *formed*," consequently "*dead matter*," certainly does not apply to the above case as reasonably as Heitzmann's who claims that teeth are living tissues.

In connection with the above, we may say that one of our patients has a superior central incisor that was split, by a fall, during childhood, near the central line, from the cutting edge to a point above the margin of the gum. He tells us that he pressed the parts together as well as he could, and left it alone. Under this treatment, it did so well that now (some twenty years afterwards) he has an excellent tooth, that has given him no trouble, and requires close inspection to observe the point, or line, of fracture. In this case, also, it would seem that there must have been "*bioplaxson*."

THE following cases treated at the Middlesex Hospital by Mr. Andrew Clarke present some very interesting features to the Dental Surgeon, as in the first we are led to believe that the cut from the pickle-tin exposed the patient to the virus of syphilis, but whether present on the metal or obtained from another source is not clearly stated, and in the second the supposition that the carious teeth had something to do with the abscess.

CASE 1. *Chancre of lower lip, followed by secondary symptoms*.—E. B—, aged twenty-two, attended Dec. 29th, 1881, complaining of a hard swelling underneath her jaw. It did not take much consideration to decide that this was a glandular enlargement secondary to a sore on the lower lip, and the sore was a typical Hunterian chancre. The patient herself attached but little importance to the sore, which she stated she had had several weeks, but it was the hard increasing swelling which alarmed her. The girl's explanation of the lesion was that in the course of her employment, filling pickle-tins, she had accidentally cut her lip with a sharp edge. She declared she had kissed no one except a young man to whom she was expecting shortly to be married, and who was seen by Mr. Clark, and found to be perfectly healthy. The patient herself had always previously enjoyed good health, and there was no reason to believe that she had knowingly exposed herself to syphilitic infection; her own statement and that of her mother, who accompanied her, were perfectly straightforward. The treatment adopted was a drachm

of the solution of perchloride of mercury three times a day, and in a week there was a marked improvement; in three weeks the chancre had all but healed, and the glandular enlargement much reduced, but then a rash appeared and ulcerated throat, and she has gone through the ordinary course of syphilis. Considering herself well on June 8th, when she discontinued her attendance of her own accord, only, however, to return with palmar psoriasis on July 8th, for which iodide of potassium was prescribed, and this she still continues to take.

CASE 2. *Abscess of the parotid gland.*—A. G—, aged fifty, first came on May 18th, 1882, with considerable enlargement about the right parotid, which she stated had been coming for several months. It was in the main hard, but there were several soft fluctuating nodules projecting from it; there was some enlargement of the submaxillary lymphatic glands and several carious teeth, but of these the patient did not complain. The diagnosis was between glandular abscess affecting the right parotid and enchondroma of the parotid. A mixture of carbonate of ammonia and cinchona was ordered, and locally an ointment of belladonna and iodide of potassium was applied. For the next two or three weeks the swelling continued to get harder and larger, and it was not until August 31st that it burst, and the clot rapidly disappeared, leaving a small discharging sinus. The patient always declined to have anything done to her teeth.—*Lancet*.

MR. C. HEATH showed a woman before the Pathological Society, of thirty-six years of age, with unilateral hypertrophy of the ramus of the mandible. At twenty-five years of age she had an attack of left hemiplegia implicating the face; her limbs recovered, and so did her face, at least partially. During the last ten years the face has become deformed. The chin was pushed over to the right by hypertrophy of the left ramus of the jaw, the body being unaffected. The vertical length of the left ramus was three inches, the right, one inch and a half. The motion of the jaw was restricted. The pathology was obscure. He referred to a somewhat similar case in Dr. Adams's work on 'Chronic Rheumatoid Arthritis,' but in it there was distinct rheumatoid affection; there was nothing of this kind in his case. He regarded it as a case of hypertrophy which could be remedied by removing part of the jaw and producing a false joint.—*Lancet*.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

ORDINARY MEETING, HELD MONDAY, MAY 7TH, 1883.

JOSEPH WALKER, M.D., President, in the Chair.

THE minutes of the previous meeting having been read and confirmed,

Mr. FREDERICK CANTON showed the model of an inferior maxilla in which the wisdom tooth of the left side was lying horizontally. It had been discovered during the preparation of a cavity in the second molar from which the pulp had been extirpated. With the hope that the tooth would be fully erupted the second molar was removed. There was slight absorption on the distal aspect of the tooth removed.

Mr. ACKERY exhibited a similar case in which the wisdom tooth of the upper jaw had caused such an amount of absorption as to very nearly expose the dental pulp of the second molar, which was of rare occurrence.

The PRESIDENT and Mr. COLEMAN made some remarks upon the cases, and pointed out that such a condition was likely to give rise to neuralgia, difficult of diagnosis. Mr. Coleman also mentioned that neuralgia had existed through the pressure of a supernumerary wisdom tooth.

Mr. HUGH DEWES reported a case in which a portion of an upper metal plate had been swallowed and passed per rectum without serious consequences.

Mr. F. HENRI WEISS, upon the invitation of the President, mentioned that treatment recommended by Mr. Thomas Smith, of Bartholomew's Hospital, for the safe passage of sharp pieces of swallowed artificial teeth, namely, the mixture of cut-up worsted with doughy food, the object being to protect the bands and other dangerous projections with the worsted, which would entangle itself with the piece.

Dr. DYCE DUCKWORTH spoke of the success which had usually followed this method.

Mr. STOCKEN called the attention of the President to an error which had crept into the report of the discussion of the previous meeting.

Mr. OAKLEY COLES handed round the models of a case for Mr. Turner, who was unable to be present, in which the second molars of the lower jaw had been deliberately raised

by the eruption of the wisdom teeth. The result was the opening of the mouth to a little over the eighth of an inch, he considered the case of great interest, and called upon the members to suggest the best treatment.

Dr. DYCE DUCKWORTH then read his paper on the "Characters of the Teeth in Persons of the Arthritic Diathesis," which elicited an animated discussion in which the President, Messrs. Coleman, Gaddes, W. C. S. Bennett, Hutchinson, F. J. Bennet, F. H. Weiss, Moon, Stocken, Cunningham, Ashley Gibbins, and others took part.

After a vote of thanks to Dr. Dyce Duckworth for his paper, the meeting adjourned until Monday, June 4th, when the discussion on "Dental Caries" will be resumed.

Dental News.

GENERAL MEDICAL COUNCIL.

(Concluded from page 444.)

Mr. MACNAMARA.—Mr. President, it is clearly my duty to make such answer as is in my power to the observations that fell from Dr. Storrar. In the first place I altogether impune Mr. Tomes's competency to express any opinion on examinations, at not one of which he has ever been present. In saying that I yield to no man round this table in the high respect in which I hold Mr. Tomes; but, if he were forty times a more clever and more learned man than I acknowledge him to be, he is not in a position to express an opinion on the conduct of an examination at which he was not present. It has been pointed out to you that fifteen candidates only were rejected out of sixty. That is one way of putting it, but there is another way of putting it, that 25 per cent. of the candidates were rejected; that is one fourth of the number that presented themselves. Dr. Storrar, with that amount of research which characterises him, as to the proceedings of the Medical Council referred to one volume. You will allow me to refer you to another record that is to be found in volume 16, for the year 1879, p. 250, Clause 10; and before I read that to you allow me to tell you that there were twenty-two members of the Council present on that occasion, and amongst these were Dr. Storrar

and Dr. Fergus. This was moved by Sir William Gull, seconded by Dr. Rolleston and agreed to: "That the Council of the Royal College of Surgeons of England be requested to reconsider their determination as to the admission of candidates for a Dental qualification *sine curriculo*, up to August, 1881." At one time it was clearly the opinion of this Medical Council that the enforcement of a *curriculum* would be a hardship upon persons then in practice. There is no other way of accounting for an unanimous resolution of that kind being adopted by this Council, but that of conceiving that they felt that there would be a hardship inflicted on gentlemen in practice, if they were called upon to produce that which it would be almost impossible for them to produce, a curriculum.

Dr. STORRAR.—May I, as we go on, just remind Mr. Macnamara that this asks for examination up to August, 1881.

Mr. MACNAMARA.—Precisely, and Mr. President there is a habit in this Council of gentlemen interrupting me whenever I speak. Would they only reserve their remarks, and pitch into me as much as they like when I have done speaking.

Dr. STORRAR.—I was helping you, Mr. Macnamara. (Laughter.)

Mr. MACNAMARA.—Mr. Macnamara would value your assistance very much if it was in the right direction. Well, it was told you that the College of Surgeons in Ireland had resolved to admit to examination *sine curriculo* all gentlemen who had been in the practice of their profession for the previous five years. That course was to be adopted up to August, 1881, and to that course they loyally adhered, but they then determined that a gentleman whose name was on the Dentists' Register, and who was entitled to all the privileges of a Dentist, and who was anxious to still further prove his competency, should be admitted to an examination on fulfilling certain conditions, his name being on the Dental Register. I may state with reference to the examination to which these gentlemen are subjected that the Board comprises three of our Surgical Court of Examiners, and if I were asked to state on my oath who was the best examiner in anatomy that I ever heard of, I should say that it was one of these gentlemen who are on this Board. And then we have three Surgeon Dentists—not Dentists, but Surgeon Dentists—Fellows of our own College to whom the honour of the College is probably as dear as it is to myself, and these constitute the Dental side of the Board. There is a committee in existence, of which I

happen to be a member, to which each gentleman's application has to be submitted. This is one of the papers relating to the examinations:

"ROYAL COLLEGE OF SURGEONS IN IRELAND.—DIPLOMA IN DENTAL SURGERY.—The next Examination will be held on Monday, 6th August, and following days. Candidates must forward the following certificate to the Registrar at the College on or before Monday, 9th July, 1883. The Registrar has been given strict orders not to receive any name after that date:—‘We hereby certify that of _____ is of good moral character, has been five years engaged in the practice of Dentistry, is a registered Dentist, and has not, during the past two years, attracted business as a Dentist by advertising or other unbecoming practices.’* The Inspection Committee have full power to refuse the application of any candidate. If the application of the candidate be accepted, he shall forward to the Registrar of the College, at least ten days before the examination, the receipt of the Bank of Ireland for ten guineas, lodged to the credit of the College. Half the fee will be returned to any candidate who fails to satisfy the examiners. The examination consists in the anatomy, physiology, and pathology of the teeth, jaws, and surrounding parts, and in mechanical Dentistry, and is partly written and partly oral. Each licentiate, before receiving the diploma, shall make and subscribe the following declaration:—‘I _____ of _____ hereby declare that I am twenty-one years of age, that so long as I hold the diploma in Dental Surgery of the Royal College of Surgeons of Ireland, I will not attract business by advertising or any other unbecoming practice; and that I agree that such diploma shall be cancelled on its being proven that I have done so.’ Candidates are requested to write their names in full, and legibly, provided they are registered Dentists. Should their names not appear in the Dental Register, candidates are not admitted to examination unless they have registered too late for publication in the latest edition of the Register, in which case the registration certificate will be accepted as equivalent to publication in the Dental Register.—By Order, JOHN BRENNEN, Registrar.”

The candidate is submitted to a most searching examination, and I hold here in my hand, Mr. President, a docu-

* Here follow signatures of two Fellows, Members, or Licentiates of a College of Surgeons, with their addresses in full, and legibly written, and two Licentiates in Dental Surgery of the Royal College of Surgeons in Ireland, or two Members of the British Dental Association, or of the Odontological Society, or of the Association of Surgeons practising Dentistry. The names in full and legibly written.

ment issued by the Registrar of the Royal College of Surgeons in Ireland:—"I certify that 477 gentlemen received the diploma of this College; fifty-three of whom were former candidates, some of them on three or four occasions; 109 were stopped, and a great number refused admission to examinations." Now, I respectfully submit for the consideration of this Council that when out of the 486 candidates who were examined 109 were positively stopped the examination cannot be of the character to which Mr. Tomes alludes. If afterwards they break that undertaking with the College with regard to advertising we at once pull them up, and if a man does not give a sufficient guarantee before the next meeting of our Council that he will not break his engagement we cancel his diploma, so that in every way the College takes every precaution that no one shall be admitted to their examination unless he is a good and desirable party, and that no one shall get our diploma unless he is capable of proving his efficiency. As to a person being passed at one examination and rejected at another we all know the value of that. That may very much depend on the state either of the examiner's stomach or of the candidate's stomach. That is one way of explaining it. But one party came before the Board at my College who appeared to be a monomaniac, because he had all the qualifications of the College of Surgeons of England, the Odontological Society, this society, and that society, so much so that we all said, "Gracious! what does he want of our qualification?" That gentleman was examined and found wanting. Tell that to Mr. Tomes.

Dr. STORRAR.—Well he was a monomaniac. (Laughter.)

Mr. MACNAMARA.—He was absolutely burdened with qualifications. He came to the College of Surgeons in Ireland and of course they carefully examined into the case and they found that they could not conscientiously pass that man. Well, I would be very sorry to undervalue the distinctions of these other bodies on that account. By some question the examiners may hit upon a subject that the candidate has not recently studied, and it is very possible that the gentleman to whom I have alluded as a monomaniac may possess, and I daresay he does possess, high qualifications. I feel very strongly on this subject, and so evidently did the Council when so long ago as the 19th July, 1879, they passed that resolution as to the time during which a man should be allowed to distinguish himself; we hold that any man who has his name on this Register without having any qualification must be one of that class to whom I personally took great exception. A long list of names was brought before you of hairdressers, tobacco merchants and so on, people who

were combining together such a very profitable occupation as that of a barber with that of a Dentist, and I heard with vast surprise that a gentleman who at that period represented the London College of Surgeons—whose name was a name to conjure by—Sir James Paget—absolutely told us that such persons were worthy of being on the Register and that we should not object to them. And the fact is that this Council put on the Register that class of men. Now this is a subject upon which the college I represented might feel that they stand upon a rock, and I should be exceedingly sorry if this Council passed any resolution which would be disregarded by us. I do not say this by way of threat, but we should be happy to meet this Council before the Privy Council on that subject. You may entertain very strong opinions, but all the twenty-one gentlemen some of whom are of as high rank as is to be found in our profession entertain the opposite opinion. They may be wrong and you may be right but I strongly suspect that if we went to a jury of our countrymen, such as the Privy Council would be, the verdict would be in favour of the College of Surgeons in Ireland.

The PRESIDENT.—Have you an amendment.

Mr. MACNAMARA.—I have no amendment, I will vote against the resolution. That is all.

Dr. FERGUS.—If you will allow me I will make a remark or two. I certainly feel, with Mr. Macnamara, that an opportunity for a certain time should be given to a man to get out of the rut and to distinguish himself from the hair-dressers and others; but I think that that has been given quite long enough. I think that the intention of this Council, or of most of the gentlemen round the table, was that this *sine curriculo* examination should exist until a man should pass a curriculum; and I may say that the Irish College of Surgeons passed a resolution to this effect, which, with Mr. Macnamara's permission, I will read:—"After the 1st day of August, 1881, no candidate shall be admitted to examination who has not pursued the following curriculum and lodged with the Registrar of the College at least a fortnight previous to examination, &c." That was a resolution passed in 1878. It is in volume sixteen of the minutes of the 'Medical Council,' page 156, but it was afterwards rescinded. That body resolved that that resolution should cease and determine. Now, having agreed somewhat with Mr. Macnamara, and having shown the very wise resolution that his College came to in 1878, I think it a great misfortune that they have departed from it. I now desire to say that I somewhat differ from Dr. Storrar. When I seconded his

resolution, and when I gave notice of a question to yourself, I did not mean to particularise any one body. My object was to assert that it was time that these examinations *sine curriculo* should cease and determine in all the bodies. I had a very strong feeling. My friend on my right (Dr. Scott Orr) will bear me out, that I opposed the examination *sine curriculo* from the very first. There was some little wish that the Dentists should be allowed to distinguish themselves by that examination until the men could take the full curriculum. But I think it was the intention of the Council that it should not be continued beyond that time. I think that the College of Surgeons in Ireland have shown no encouragement whatever to a man to take the curriculum at all, because I see in the table which has been presented that not a single man passed with the curriculum. It is the only body in the table which has not some one that has not passed with the curriculum. Mr. Macnamara tells me that nobody had presented himself, and that they had no school of Dentistry in Ireland. I do not think that that improves his position. He laid considerable stress on the fact that this Council had asked the College of Surgeons of Glasgow to reconsider their determination as to examinations *sine curriculo*. But he did not tell you that that was only to be up to 1881. That quite confirms my line of argument, that this was simply a temporary matter only for a certain length of time, and that the College of Surgeons were asked to be like other bodies and to give an opportunity for Dentists to be examined, who wished to be examined, and to get a license. It is no hardship whatever not to examine them. They are legally qualified to practice, and if they want to get a higher distinction, there is time given for a curriculum. I think that this Council should indicate to all the bodies that it is high time that examinations *sine curriculo* should cease.

Professor HUMPHRY, I think that some slight confusion has arisen with regard to the question of admission to examinations without curriculum. At a given date the Council determined on a certain long and arduous curriculum of Dentistry which it would be almost impossible for any man already engaged in practice to go through, but which it was determined ought to be gone through by future students in Dentistry. The College of Surgeons of England was requested to admit their existing students to examination without curriculum, but declined to do so because they thought that all their candidates had hitherto gone through a curriculum, and it would lower the estimate of their qualification and be unfair to their licentiates who had complied with their

curriculum if a curriculum was not insisted upon. The point is that this was a curriculum for students in Dentistry. Now the point of the College of Surgeons in Ireland is a somewhat different one. They did not admit students in Dentistry to examination without a curriculum. They complied with the rule of the Council in that respect. The request of the Council hitherto has been really complied with, but the College says further,—and I think with some reason—that members of the Dental profession who are on the Register and who are actually practising should have an opportunity offered to them, and indeed should be stimulated by the opportunity, to acquire a good knowledge and pass a good examination; and the College says that on the whole they are benefiting the profession of Dentistry by encouraging those who came on the Register first to qualify in a regular manner by passing a good examination. They could not possibly go through a curriculum, but they could by work acquire the knowledge which would enable them to pass the examination *sine curriculo*. The College of Surgeons in Ireland says, “we think it right to offer the opportunity, we do offer it; and as this matter at present stands, we determine to continue to do so,” and I cannot but think that if Mr. Macnamara’s challenge were accepted it is not impossible that the College of Surgeons in Ireland would be able to justify itself. I think that it seems reasonable that those who were placed on the Register in the first instance, without curriculum and without examination, on the ground of their being in practice when the Dentist’s Bill became law, should be encouraged to acquire such knowledge in their profession as will enable them to obtain the diploma of such a body as the College of Surgeons in Ireland; we have no reason to suppose that the examination of that body is not a good one. I think that the requirements which Mr. Macnamara has pointed out in his schedule are good and fair and that we have no reason to think that the examination is not a sufficient test. The rejection of fifteen out of sixty, or one quarter of the candidates—men who were actually in the profession of Dentistry—may be regarded, as far it goes, as an evidence that the examination is not very easy. I confess that I would rather leave the matter as it is at present, I shall therefore not support Dr. Storrar’s motion.

MR. SIMON.—Is it to be understood that all the sixty men who were examined by the College of Surgeons in Ireland were men who were previously on the Register?

MR. MACNAMARA.—I want the Council clearly to understand that we examine no person *sine curriculo* whose name is not on the Dental Register.

Mr. SIMON.—Exactly, that is a very important point of course.

Dr. HUMPHRY.—That is the point.

Dr. STORRAR.—My answer to Mr. Macnamara would be a very brief one. It is simply this—that an arrangement was come to that no examinations should be conducted by the College of Surgeons in Ireland *sine curriculo* after 1881. Mr. Macnamara's answer to that is simply this—that the College of Surgeons in Ireland changed their mind. They determined to examine men *sine curriculo*, provided that they are on the Dentists' Register. They have proceeded to do so, and they have made no communication to this Council, that I am aware of, of their having come to that resolution. That is the simple answer apart from any other question that Mr. Macnamara has introduced in connection with this subject. I confess my very great regret that Professor Humphry has taken the line that he has done. It is acknowledged on all hands that there are men admitted to the Dental Register in consideration of their having been in practice before the passing of the Act, and who are really very ignorant. We have reason to suppose that the educated Dentists are anxious to improve the status of their profession. A great many of these ignorant men are pressing forward to go up for examination *sine curriculo*, that they may have a qualification after their name. There are very many persons practising Dentistry who are scientific men and men of repute, and there is also a large number of men who are anything but that. Whether I carry the motion or not I shall think it my duty to press it without detaining you further.

Professor HUMPHRY.—Add the words, “unless they are already on the Dental Register.”

Mr. MACNAMARA.—We should all vote for that.

Professor HUMPHRY.—I think that Dr. Storrar's argument is a strong one in favour of these examinations *sine curriculo*. There are on the Register already one class of men who are really good, educated men, and another class who are not so. Now, the opportunity of passing this examination of the College of Surgeons enables such a distinction to be drawn, and we must further remember that the men of this class will pass away in a few years, and there will be no succession of them. It is only such as are on the Register. If such men can pass an examination, let them do so, and let it be known that they are a higher class of men. I therefore move as a rider the words “Unless they are already on the Dental Register.”

Dr. FERGUS.—But as a matter of fact that is the case now,

it adds nothing to what we are doing. I do not think that that alters matters. It just leaves us as we are.

Professor HUMPHRY.—I will move that as a rider.

Professor MARSHALL seconded the rider. The additional words were subsequently turned into an amendment.

Mr. SIMON.—On the question of the rider I would say this: that I think that there is one point that ought to be a little regarded. I am very much on the side of Mr. Macnamara. I think that he has made a very good case in the main about the action taken by his College. But I think, also, that in matters of that sort the institution, like Cæsar's wife, ought not to be even suspected. I should like to know whether these sixty men are on the Irish Register. I must say this: I think that it would not be right that there should be a competition between the different divisions of the United Kingdom as regards *sine curriculo* examinations. I think it quite fair that the examination of the College of Surgeons in Ireland should be open to Irish Dentists who are on the Register, practising in Ireland; but I still think that it would be desirable that it should apply only to men *bonâ fide* practising in Ireland. I should be very glad if Mr. Macnamara consented to include that in the rider.

Dr. QUAIN.—It really seems to me very simple. There is a class of men on the Register who are accused of being ignorant and incompetent, and so on, and they offer to pass a sufficient examination. Surely these people ought to be admitted to show their competency. If it was to apply to young men going up, not having been in practice, I should not say a word in favour of it. But when people are desirous of going up, who have already passed, and who wish to be tested and to have an additional qualification, I think that it ought to be encouraged by the Council rather than reprobated.

Dr. AQUILLA SMITH (King and Queen's College of Physicians, Ireland).—As to this examination of the College of Surgeons in Dublin, it has been clearly shown by the results of it that a considerable proportion of the men have been rejected. The class of men who would avail themselves of this privilege are men who are at present on the Dental Register. That class of men will pass away in a few years. I think that the fact that the College of Surgeons hold an examination in which such a proportion of the candidates is rejected is a sufficient guarantee that the examination is a fair test. I think that every encouragement ought to be given to the men to show their competency. If they are desirous of reaching a higher standard in the profession, I think that we ought to encourage them.

The PRESIDENT.—There is an amendment moved by Prof. Humphry and seconded by Prof. Marshall, "That in the opinion of this Council the examinations in Dentistry *sine curriculo*, should be limited to persons who are already on the Dentists' Register."

Dr. HERON WATSON (College of Surgeons, Edinburgh).—The only influence which the rider could produce is to express in so many words a fact which admittedly exists in connection with all examinations *sine curriculo*, which permit the addition of certain titles to men whose names are already on the Register. It cannot therefore make any material difference to the original motion tendered to us by Dr. Storrar and by Dr. Fergus. But I ask you practically what will be the result of such a motion being passed? The motion says that they shall cease and determine after December, 1883. The only effect will be that between this time and the 31st December all the portals by which men can be admitted to examination *sine curriculo* will be so choked with those who wish to come forward that it will be inconvenient to the examiners. It will make no real difference. Those men who have it in their hearts to obtain some other title which they may add to their registrable title are perfectly certain to come forward *en bloc* or *en masse*, and pass under probably the same circumstances that they would do were the opportunity extended over a longer period. So far as regards the college with which I am connected there is no practical objection that the date should be determined. So far as their position was concerned, when the Dental Act was passed they would have excluded all the objectionable people under the title of Dentists. Blacksmiths and tobacconists ought never to have been put on the Register, but as they have got on the Register it seems to me a highly creditable thing that some of the men whose names are on the Register, and who have not got a title, should come up for this examination and get a title which may be added to their name upon the Register. While we should not in the least degree object to this motion being carried, it appears to me that so early a date as the 31st December would be unfortunate, because it would be inconvenient to those who conduct the examinations.

Mr. COLLINS (Apothecaries Hall, Ireland).—I think that this document which Mr. Macnamara has produced from the Registrar of the Royal College of Surgeons in Ireland, is a very important one, because it shows clearly that some of these men are striving to get a competent knowledge of their business as Dentists. Fifty-three of the 477 gentlemen who have received the diploma in Dental Surgery came up for

examination, and had been previously before the Board of Examiners in Dublin three or four times. Consequently they are making that effort which is desirable and right to increase their knowledge. I agree with the motion before us to allow these men on the Register to get an opportunity of increasing their knowledge and having a title added to their names.

Mr. MARSHALL (College of Surgeons, England).—I will ask Mr. Simon to consider the question from this point of view. If he restricts the right to go up for an examination at the Irish College of Surgeons, without a curriculum, to Irish Dentists, he will be taking away with one hand the boon that he would confer with the other. He admitted that there was some justice that men already on the Register should be allowed to get an honorable distinction attached to their name. It is with that view that I supported the proposition of Professor Humphry, and I should be very sorry to find that that boon was limited by other restrictions. There could be no competition with the English authorities. We should never admit any of these gentlemen. We have expressed our opinion that we would not admit any one who has not passed through a curriculum. Therefore there could be no competition with us and the Irish College of Surgeons. I think there would be no competition on the part of the other colleges. I think that those men who are on the Register for England are just as much entitled to the boon as if they lived in Ireland. I hope that there will be no supposition, that we want to restrict it to Irish Dentists.

The amendment was then put to the vote. The numbers were, in favour, twelve; on the contrary, one. It was then submitted as a substantive resolution, and carried unanimously.

On April 26th (the last day) the Medical Act Amendment Bill was considered. Among the motions on this subject of which notice had been given was the following, which had been put on the paper by Dr. Quain: "That in Clause 70 of the Bill it would be most objectionable to repeal the portion of Section 4 of the Dentists Act which prohibits prosecution by private persons, seeing that there is no reason why a distinction should be made between Dentists and registered medical practitioners as regards prosecution (see Section 27, Clause 5 of the Bill), and that if prosecutions were instituted by private individuals against the persons on the Dentists Register who had been objected to, the Council would be bound to maintain the accuracy of the Register, and would be engaged in litigation all over the country."

Clause 70 of the Medical Act Amendment Bill is as follows:

There shall be repealed so much of Section 4 of the Dentists Act, 1878, as provides that a prosecution for any of the offences above in that Act mentioned shall not be instituted by a private person, except with the consent of the general Council or of a branch Council, and a prosecution for any such offences may be instituted by a private person accordingly.

It shall be lawful for Her Majesty at any time after the said appointed day to declare by Order in Council that Section 28 of the said Dentists Act, 1878, shall be in force on and after a day to be named in such order, but in the meantime and until such order has been made, and before such day as last aforesaid, such section shall not be deemed to be in force.

Any power given by the Dentists Act, 1878, to the General Council may, on and after such time as the Medical Council comes into office, be exercised by the Medical Council.

Save as in this Act mentioned by the Dentists Act, 1878, shall not be affected by this Act.

Dr. QUAIN.—Dr. Storrar has been good enough to point my attention to the fact that this clause does not refer to registered practitioners at all.

Dr. STORRAR.—Clause 5 of Section 27 of the Bill applies to the prosecution of medical practitioners who are already on the Register, for some assumption of title that they have no claim to. It is that no prosecution of that kind can be established without the authority of the Council. But if you will turn to Section 4 of the Dentists Act you will find that this applies to a man practising Dentistry who is not on the Register at all, and therefore what is desired in the new Bill as a concession to the Dentists is that when a man is practising Dentistry without being upon the Register at all, they should not have their hands tied by being obliged to come before the Council to ask permission to prosecute.

Dr. QUAIN.—Certainly; no one can object to that.

Dr. STORRAR.—Then you will find that the repeal they ask for is simply to put their hands at liberty for that purpose.

Dr. QUAIN.—How is it then in reference to prosecutions against assistant medical practitioners?

Dr. STORRAR.—Well, we see cases every now and then—in fact, we saw some cases yesterday—of men that had been practising under other practitioners, but who had no title whatever. They were summoned without any application to this Council, and punished by a penalty of £10 before the magistrate. A man named Upfield was brought up at Worship Street.

Dr. QUAIN.—At all events, we feel that the power of prosecution should not be directed against registered practitioners without the sanction of the Council.

Dr. STORRAR.—Yes, that is all right; but this does not apply to registered practitioners at all. It is only a repeal of Section 4 of the Dentists Act which prevents them from prosecuting men who are not on the Register. I am not saying this without authority.

The PRESIDENT (Dr. Acland). Well, Dr. Quain, will you move that?

Dr. QUAIN.—No; my feeling is that registered Dentists should not be prosecuted without the sanction of the Council.

No other Dental business was transacted.

DENTAL HOSPITAL OF LONDON.

A CONCERT is announced to take place on Thursday, May 31st, at the Grosvenor Hall, 200, Buckingham Palace Road, in aid of the fund for the extension of the premises of the above institution, rendered absolutely necessary by the large increase in the number of patients. The Wandering Minstrels Amateur Orchestral Society have kindly undertaken the programme.

[We earnestly trust this concert will be liberally supported by the Dental profession and their friends through their influence. The Hospital, that is to benefit by the results, has done invaluable services in raising the status, skill, and education of the profession, and deserves every assistance that lies in the power of the profession to render. For the convenience of our subscribers tickets may be had of the Publisher of this Journal on application at or to the office (*see advertisement*)].

NATIONAL DENTAL HOSPITAL AND COLLEGE.

THE Annual Distribution of Prizes will take place on May 23rd at the Beethoven Rooms, Harley Street, at 8 o'clock, Sir T. Spencer Wells, Bart., F.R.C.S., in the chair, to be followed by a programme of vocal and instrumental music.

ROYAL COLLEGE OF SURGEONS, EDINBURGH.

DURING the recent examinations the following gentlemen passed their first professional examination for the license in Dental Surgery:—James Maynard Dunlop (Dumfries),

James Graham Munro (New York), John Wood, L.D.S.I. (Dumfries); and the following gentlemen passed their final examination and were admitted L.D.S.:—William John Mason (Somersetshire), William Thomas Elliott (Diss, Norfolk).

EDINBURGH DENTAL HOSPITAL AND SCHOOL.

THE Summer Session of the Edinburgh Dental School opened on May 1st, with a highly gratifying increase in the number of Students. The new entrants numbered six. This betokens an increasing appreciation of the thorough teaching by this school, which we believe is well deserved.

ASHENHURST FUND.

Per Messrs. C. Ash and Sons—	£	s.	d.
“A Willing Contributor”	0	2	6

Further subscriptions will be received by Messrs. C. Ash and Sons, the Dental Manufacturing Company, Mr. Rutterford, Messrs. W. and J. Jamieson, and the Editor of this Journal.

APPOINTMENT.

CHAS. H. GLASSINGTON, M.R.C.S., has been appointed House Surgeon to the National Dental Hospital, Great Portland Street, *vice* F. Bate, L.D.S. Eng., resigned.

MONTHLY REPORT OF CASES TREATED AT THE DENTAL HOSPITAL OF LONDON, FROM APRIL 1ST TO APRIL 30TH, 1883.

Extractions	{ Children under 14	431
	{ Adults	895
	{ Under Nitrous Oxide	416
Gold Stoppings.....		164
White Foil ditto		2
Plastic ditto.....		538
Irregularities of the Teeth treated mechanically.....		105
Miscellaneous Cases.....		145
Advice Cases.....		144
Total.....		2840

W. F. CORNELIUS,
House Surgeon.

MONTHLY REPORT OF CASES TREATED AT THE NATIONAL DENTAL HOSPITAL,

FROM APRIL 1ST TO APRIL 30TH, 1883.

Number of Patients attended	1574
Extractions { Children under 14.....	451
Adults.....	774
Under Nitrous Oxide	180
Gold Stoppings	73
Other Stoppings	428
Advice and Scaling	160
Irregularities of the Teeth	170
Miscellaneous.....	240
Total	2476

CHAS. W. GLASSINGTON,
House Surgeon.

To Correspondents.

ANSWERS TO CORRESPONDENTS.

“J. S. D.”—There is no other remedy than improving the general condition of health, and time. We have had similar cases when the symptom has ultimately disappeared.

Communications have been received from Messrs. Ash & Sons (London), Secretary of the College of Surgeons (Edinburgh), George Ward (London), Joseph Taylor (Dewsbury), W. F. Cornelius (London), Chas. Glassington (London), J. F. Pink (London), J. D. Walker (Doncaster), Grenville Jones (Shrewsbury), H. D. Justi (Philadelphia), G. Reid (Chicago), H. O. Hunt (Iowa City), W. Bowman Macleod (Edinburgh), J. Jamieson (Glasgow), J. Wood (Dumfries).

BOOKS AND PAPERS RECEIVED.

‘Die Zahntechnische Reform.’ ‘Pharmaceutical Journal.’ ‘British Medical Journal.’ ‘Lancet.’ ‘Manchester Guardian.’ ‘Dental Advertiser.’ ‘Dental Record.’ ‘Correspondenz Blatt für Zahnärzte.’ ‘Dental Practitioner.’ ‘Glasgow Medical Journal.’ ‘Missouri Dental Journal.’ ‘Trans. of the Odontological Society of Great Britain.’ ‘Cape Argus.’ ‘Bolton Evening News.’ ‘Warrington Guardian.’ ‘Birmingham Daily Post.’ ‘The Manchester Courier and Lancashire General Advertiser.’ ‘Gazette d’Hôpitaux.’

NOTICE.—We desire that it may be clearly understood that our pages are open to all for free expression of their views on matters connected with our profession. We only ask for terseness of expression and MODERATION IN TONE.

When otherwise unobjectionable, difference of political or other opinion will never be regarded by the Editor as a disqualification for the admission of any communication to the pages of the BRITISH JOURNAL OF DENTAL SCIENCE.

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VOL. XXVI.

ON THE SPONTANEOUS FRACTURE OF THE TEETH.

By A. COLEMAN, F.R.C.S.*

UNDER this designation I venture to include those cases in which fracture or splitting of the teeth occurs without any apparent assignable cause. Such cases have from time to time been brought under the notice of this Society, but have never, so far as I am able to find out, been described in any of the works on Dental Surgery. Even Wedl, who has collected such a vast amount of information in regard to all abnormal conditions and affections occurring to the teeth, fails to record or describe any such as this.†

The history of these cases may be well gathered from the record of communications made to this Society at the May meeting of last year. "Mr. Sewill handed round a card on which the following specimens were mounted:—
'(3) a lower molar, which looked as if a longitudinal section had been made through one of the roots, the crown being

* Read before the Odontological Society of Great Britain, April 2nd, 1883.

† Since this paper was printed my attention has been called to a passage in an excellent paper by Dr. Arkövy, on "The Relations of Pathological Concretions of the Tooth-pulp to Prosopalgia (Tic Douloureux)," published last year in the 'Journal of the British Dental Association' (July and August, 1882). Dr. Arkövy says: "There is, it is true, a form of pulpitis occurring in outwardly sound teeth which, according to some authors, is due sometimes to internal caries, and sometimes it occurs in conjunction with (or as the result of) bursting of the teeth ('zahn-explosion'); but the descriptions are so obscure, and the particulars so unreliable, that these cases cannot yet be unreservedly accepted." Dr. Langmore, who kindly called my attention to the above reference, informs me that when this paper was in process of translation, he wrote to Dr. Arkövy asking for some explanation of this passage, especially as to the meaning of the term "zahn-explosion," but the author, in reply, only gave a reference to the 'Vierteljahresschrift für Zahnheilkunde,' April, 1868, p. 146, intimating that he himself had no personal knowledge of the cases referred to, and that the description given was not as clear as could be wished. I have not had an opportunity of referring to the periodical named, but I should suppose that by "zahn-explosion" is meant the supposed splitting of teeth by gases generated in their pulp cavities.

intact. The tooth presented exactly the same appearance when first extracted. Mr. Sewill at once explored the alveolus for the missing fragment and extracted it. The patient had not met with any accident, and no cause could be assigned for the fracture."

"Mr. F. H. Weiss said that Mr. Sewill's third specimen reminded him of a patient who came to him complaining of tenderness and neuralgic pain in the second right upper bicuspid. The tooth appeared at first sight to be sound; there was no caries, but closer inspection revealed the fact that it was split for about two thirds of its length. The patient was quite unaware how the accident had happened."

"Mr. F. Canton said a lady once came to him complaining of pain in an upper bicuspid. He examined it carefully, but could not find much the matter with it. Eighteen months later the patient returned, saying that the tooth continued very sensitive; the line of fracture was then quite evident, and he extracted the tooth. But the patient could not tell in the least how it had been broken."

"Mr. Stocken mentioned the case of a gentleman who had applied to him twice on account of similar fractures,—first of a first, and then of a second lower molar; the latter was split right down to the very end of the fangs."

"Mr. Steel said that a few years ago an old lady, about seventy years of age, applied to him on account of pain in a molar, which had been stopped with gold by Mr. Cartwright forty years before. The tooth and stopping appeared quite sound, but it was so painful that he extracted it, and then found that it had been broken in half; the line of division could not be distinguished whilst the tooth was *in situ*. The pulp was alive."

The cases I have met with, some five or six in number, could be almost described in the very words of the above.

The first occurred many years ago when I was quite a beginner, and distressed me not a little. The offending tooth was a lower molar; it had a small, not deep, carious cavity on the anterior aspect, and of the black variety. As the tooth had been long very painful and tender to bite upon, I determined to extract it, but on placing the forceps upon it and pressing them down, the crown came away with a slight snap. The remainder of the tooth appearing free from sensitiveness—the pulp being calcified though dark coloured—I determined to leave it and watch the result, but I never saw my patient again. The crown, which I kept for several years, but have unfortunately lost, appeared to have been split horizontally nearly across, but there were evidences that the forceps had completed the work.

The next case I will mention came under my hands some thirteen or fourteen years ago, in the person of a gentleman, possessing one of the most excellent sets of teeth I have, perhaps, ever seen, and who has been so good as to contribute in his own person several matters of considerable interest in Dental Surgery; thus, in addition to the above, he has furnished me with the best examples of exostoses of the maxillæ I have ever seen, and at the age of eighty-six obligingly erupted a third molar.

This gentleman came to me complaining of pain and discomfort, especially when eating, in an upper molar of the right side. There was no appearance of any other detriment to the tooth, except that the masticating surface was somewhat worn, and had received a small, pin-hole gold filling, beautifully executed by Mr. Cartwright, *secundus*. I recommended sal volatile, having found that a useful local remedy in exposed sensitive dentine. I saw the tooth from time to time, and on the last occasion found it split diagonally in the antero-posterior direction. I removed the smaller fragment, slightly attached to the gum. The pulp was dead, but had undergone considerable calcification. The only history of violence was here the filling of the tooth.

Another case which I will mention occurred within the last two years. A large fragment of an upper bicuspid came away without any accountable reason, and left an exposed pulp, which I destroyed with some difficulty, owing to the amount of calcification.

The last case I will describe occurred in the person of an army surgeon, who possesses a magnificent set of teeth. He came to see me last autumn, on account of a lower right first molar, which had for a long time been a source of annoyance to him, especially in mastication. Some two or three months previous he had consulted Mr. Ewbank, who could detect nothing wrong with the tooth. It being slightly worn on the surface, I recommended the application of sal volatile to the crown of the tooth, and a saturated solution of Ammonii Chloridi to the surrounding gum, which I have found very serviceable as a counter-irritant in cases of irritable pulps (hyperæmia?). My colleague, Mr. Lyons, who saw the case with me—it was at St. Bartholomew's—could detect nothing wrong with the tooth. A month or two later he returned, and there being now severe periosteal mischief, I determined to remove the tooth. With this object gas was administered by Mr. Mills, but on applying the forceps, with the minimum of force, the tooth fractured. I removed one root, but before I had time to remove the second the patient had recovered, and I therefore left it.

When fresh, the tooth showed distinctly an old split, or cleft, running down to the pulp, which was dead, but which had undergone considerable calcification. When seen previously I can confidently assert there was not the slightest appearance of any cleft or crack. Here, again, there was no history of violence or accident that could have caused a fracture.

During the record of cases at the May meeting of the Society in last year no explanation was offered for these occurrences; but on a former occasion I distinctly recollect that they were accounted for by the generation of gases within the pulp cavity, which, by expansive force, split open the tooth. This explanation always appeared to me a very unsatisfactory one, for, even admitting that the apical foramina could be so occluded that gases could not pass out of them, the splitting of a tooth from such a cause could hardly be unattended with marked and very disagreeable symptoms. Moreover, there were the cases where a living pulp existed.

Upon the cause of these splittings I had formed some conjectures, and these were strongly confirmed upon seeing the specimen exhibited by Mr. Sewill, and when it was pointed out to me by Mr. Henri Weiss, that a considerable calcification of the pulp had taken place. I therefore venture to assert that these cases of spontaneous fracture occur through a calcification of the dental pulp accompanied with an enlargement of the same during that process.

But it may be said calcification of the pulp is a normal condition occurring in teeth much used and in persons past the middle age. All healthy teeth removed late in life give evidences of it. If teeth in which it is in progress be removed, we often, perhaps generally, find calcospherites, and which, as a rule, cause no discomfort to their possessors. How is it then that, in some cases of calcification of the pulp, we get such intense pain that in order to account for it we are driven to the conclusion that there is a pressure resulting from it upon some sensitive surroundings. At the November meeting of last year I described a case of perfect calcification of the pulp of an upper central incisor; the tooth had never caused the slightest pain. My report was immediately followed by a similar one from Mr. Redman, but in this case "the lady to whom it had belonged had suffered for a number of years from most severe attacks of pain which she referred to this tooth."

I trust the explanation I shall offer may not be considered too theoretical to propound before a Society like this. I imagine that in these painful cases the pulp has, prior to calcification, been in an hyperæmic condition—a condition in

which it possesses a tendency to hypertrophy, and where had it been exposed by caries, it would have augmented itself as a polypus. Now, calcifying in this condition an expanded mass results which, pressing upon any portions of remaining living pulp, gives rise to neuralgia; but where no living pulp exists it exerts its pressure upon the surrounding dentine, which highly elastic body reacts upon the cementum and produces a like result.* This explanation, it occurs to me, will also satisfactorily account for those cases in which pain is experienced in well-filled teeth some time after the operation has been carried out. I will mention two such cases which have come under my observation within the last two years. The first, a gentleman about twenty-two years of age, applied to me in consequence of continual wearing pain, and acute pain when exposed to heat and cold, in a lower second molar tooth having a large filling on the masticating surface of amalgam, probably Fletcher's platinum. The filling had been admirably carried out and finished off. As a guarantee of this I need only mention that it was the work of Mr. Roberts, formerly of Ramsgate. It had been done four or five years, and had only recently caused him trouble. Chloride of ammonium in solution applied to the gum afforded some relief, but the pain increasing, he solicited the removal of the tooth. This I declined to do, but I drilled through the stopping, expecting to come down upon a devitalised pulp, but came upon very sensitive dentine, perfectly sweet. I enlarged the opening considerably, and then filled up with gutta-percha, the pain and tenderness quite disappearing. The other case occurred late in last summer, the tooth was an upper wisdom, and filled with phosphate of zinc cement. There were the like conditions, and the same cessation of pain following the same treatment.

Now, I apprehend that in these cases there occurred a calcification of the pulp with enlargement, and that the thin layer of dentine situated between this and the filling was elevated, and thus pressed against the latter. By the treatment the pressure was removed.

* The teeth, together with the bony tissue partially investing them, have a high degree of elasticity, in consequence of which they may be subjected to marked compression and still return to their previous condition upon the removal of the source of the latter; these physical properties appertain to the *dentine* in particular, which, in addition to a solid structure, presents a delicacy of texture that admits of a high degree of tension.—'Pathology of the Teeth,' by Carl Wedl, M.D., p. 30.

THE CHARACTERS OF THE TEETH IN PERSONS OF
THE ARTHRITIC DIATHESIS.*

By DYCE DUCKWORTH, M.D., F.R.C.P.,

ASSISTANT PHYSICIAN TO ST. BARTHOLOMEW'S HOSPITAL.

MR. PRESIDENT AND GENTLEMEN,—I venture with some diffidence to lay before you this evening the results of observations that, as a physician, I have made for some years past upon some of the characters of the teeth in persons of the arthritic diathesis.

When I have told you all that I know you will find that I have but treated of a part of a very large subject, and I can only ask you, of your courtesy, to regard this effort as a small contribution to a study of extreme interest and practical importance, viz. that of the characters of the teeth in relation to the various diathetic habits of the human body.

I must at once declare myself a firm believer in the existence of several well-marked diatheses. It is not much the fashion at the present day to study or allude to these. The tendency of the teaching of the last quarter of a century has been to ignore them, and to trust more to precise physical methods in examining each individual in order to elicit the facts of disease and the principles which should guide the treatment of it.

For myself, I had the singular fortune to be trained both in the school of physiognomical and diathetic research, in that of exact physical diagnosis, and I have always striven to employ both methods to the utmost. I believe that a right interpretation of morbid states and tendencies can only be gained by the conjoint and mutually corrective application of both these methods to the individual.

To those who have not had systematic training in diathetic study the matter is very much like a sealed book, and, without teaching, it will take, even with aptness for the study, well nigh a lifetime for the correct interpretation of the varied forms presented by the several diatheses, either in their pure or commingled conditions.

To study any one of them singly would be a vicious plan, and likely to lead to narrowness of view and untrue generalisations.

Each individual must be referred, as nearly as possible, to his exact diathetic position. This is often difficult, and

* Read before the Odontological Society of Great Britain, May 7th, 1883.

often impossible. A clear conception of the type of each diathesis must first be gained, and then the measures of departure from this be gauged, and the influence of blended diatheses, or of any cross-taints, be noted. Let me illustrate this by simply alluding to an instance in which a person of scrofulous habit is cross-tainted with syphilis; or one in which there is a conjoint heredity of both struma and gout. To recognise such commingling there must first be known the types respectively presented by pure scrofula and pure gout, and the special manifestations of syphilitic virus must likewise be appreciated.

A diathesis is recognised by certain characteristics in the bodily conformation. These are special and peculiar in each form, and they are usually inherited, though they may, conceivably, be acquired.

With each conformation there exists also a special tendency and predisposition to disease, or a definite line upon which degenerative changes will most probably take place. Each diathesis has therefore its accompanying cachexia. This was the teaching of Laycock of Edinburgh, my former preceptor, and one of the greatest and most philosophical physiognomists that ever lived.*

Thus, if a diathetic or constitutional condition be recognised in an individual, one may generally rightly predicate the morbid or cachectic tendencies likely to supervene in the life-history of that individual.

The recognition of a diathesis is attained by a study in detail of the several tissues of the body, so far as is possible, and regard must be had to the development of the different systems. The bony conformation and the various portions of the cutaneous system naturally command the greatest attention, and amongst these have to be considered the teeth, which more particularly concern us at present.

It must be borne in mind that for one example which typifies any particular diathesis, we meet with a dozen or more in which a blending or commingling with other constitutional or diathetic states occurs. This is exactly what might be expected. An ordinary inheritance is that of commingled diatheses, and it is only when the progenitors on both sides present the characters of one diathesis that we may look for a perfect development of any pure diathesis.

It, however, happens that in an individual the peculiarity of one parent or ancestor is inherited in a more prominent degree, just as in likeness of feature or in mental character, one member of a family "takes after" one parent or ancestor,

* *Vide* his 'Medical Observation and Research,' edit. 2, Edinb., 1864; also lectures in 'Medical Times and Gazette,' January to June, 1862.

while another reproduces the likeness and qualities of the other. For one cannot doubt that these likenesses of feature and character have also as exactly reproduced counterparts in the several bodily tissues, with the same potential qualities as to evolution, and the same tendencies to break down in similar lines of decay. I assume this as an inevitable law, and daily experience confirms the truth of it.

I have preferred to discuss the characters of the teeth in persons of the arthritic diathesis, rather than to speak about the teeth of the gouty only. I believe it is the case that there is a basic arthritic habit of body or diathesis, and that from this issue at least two branches, the gouty and the rheumatic stocks. These two are not convertible: they are distinctly different, but they may commingle. One will not produce the other, and will not become evolved into the other.

Both of these branches are very largely prevalent in this country, the gouty one being certainly commoner within the geographical limits of England proper, and most common in the south of England. The rheumatic diathesis is more widely spread and more common than the gouty. London appears to be the headquarters, or centre, of gout, and more true, unequivocal, gouty disease is observed in this metropolis than anywhere else in the world. This is unquestionably true in spite of many pardonable and unpardonable errors of diagnosis. A most interesting question may be asked, and one to which no answer can be given, as to the time when the peculiarities now recognised as associated with the several diatheses, first manifested themselves. We have in this country, I suppose, as mixed a race as can be found anywhere in the world, and the comminglings of every known habit of body have been going on amongst us for centuries. Such varied blendings, however, give small indications, except in cases where there is sufficient predominance of characters which may be referred to any one diathesis, or to compounds of it and some other. Hence, it is very important not to be too dogmatic in asserting of any one class that such and such characteristics *always* prevail. We must take note of the indications in each instance, and, from study of a large number of examples, we may gather knowledge as to the type common to the majority. It is in this manner that I have sought to supply to-night such information as I can give respecting the dentition in persons arthritically predisposed and affected.

Already, this session, a communication has been read to this Society by Dr. Alfred Carpenter, in which some very dogmatic statements were made as to the teeth in persons the subjects of gout. These opinions were challenged by

several speakers in a subsequent debate upon the subject, and I also propose to discuss them as I proceed.

I regret that I have no sufficient number of facts to guide me to an opinion respecting the primary dentition of those inheriting gouty or rheumatic tendency. Such knowledge as I have warrants me in affirming that the evolution and development of the milk teeth in such children is, for the most part, very satisfactory, and in strong contrast with that observed in the children of strumous parentage.

Let it be noted, at once, that the inheritors of an arthritic constitution are in no way free from a possible strumous or syphilitic taint, and that they, equally with other children, may be subjects of ill-development owing to rickets or other devitalising causes.

But, given a fair chance in the world, the fact remains, I believe, that primary dentition in such cases is eminently satisfactory, and about as good as can be desired.

Without reference to either primary or secondary dentition, Dr. Alfred Carpenter stated that "the effects of the gouty diathesis do not show themselves so markedly upon the teeth in early life as is the case with the syphilitic or the tubercular states." To this I agree.*

Dr. Carpenter proceeded further to state that "he believed the teeth decayed sooner in those who were descended from gouty parents; that they were more prone to caries, and especially liable to those periodontal inflammations which ultimately lead to necrosis."

To these statements I cannot at all agree. My experience supplies very different evidence.

I have paid particular attention to the condition of the teeth in at least 300 hospital patients, *who were the subjects of unequivocal gout in every degree.*† Amongst these were cases in which the disease was inherited in very varying degree, and in which it seemed to have been newly acquired. These observations, noted at the time in my books, formed part of a systematic study of the textural physiognomy of the gouty, and were made with no other object than to record exact facts relating to this matter. The main results of this inquiry might be summarised in a few words, and are to this effect, that the teeth of the gouty are remarkably strong, well-enamelled, enduring, and unusually free from decay.‡

* 'Brit. Med. Journ.,' November 18, 1882, p. 984.

† It is, of course, not possible to study the teeth of one's private patients as is done in a clinic; but my observation, so far as I have conducted it, in this sphere, fully confirms all the statements and opinions put forward in this paper.

‡ "Gouty people generally are not more than others liable to decay of

Laycock taught this five-and-twenty years ago, and the same facts, I am informed, were also demonstrated by his pupil, Mr. Jonathan Hutchinson. My friend and colleague, Mr. Coleman, tells me his experience fully confirms these statements.

So much then for the main features of the teeth of the gouty. Much more remains to be said. I find that the teeth are commonly large and regular.* The edges are smooth in the permanent set, not crenated in cases of pure arthritic constitution. It has been noted that there is a tendency for one or more of the incisor teeth in the lower jaw to be pushed forward in persons of the arthritic diathesis. To this irregularity Laycock gave the name of "buck teeth." I have frequently found this to be the case, but I am not prepared to affirm that such a condition is always significant of this particular habit of body, and I believe that it is not confined to such instances. Overcrowding is less common by far, in all cases, in the lower jaw than in the upper, and so there seems less reason for this ejection from the ranks in cases where, as in persons of good gouty constitution, there is no imperfect development of the inferior maxilla. These "buck" teeth may not be produced till middle life, and thus incisors that have once been well in rank come to be partly turned round, or pushed forward. I wish I could furnish an explanation of this occurrence. I can only call attention to a well-observed fact, and one, perhaps, not sufficiently recognised. Laycock was of opinion that this occurrence was more common in persons who presented signs of the *asthenic* arthritic diathesis. I think, however, that I have certainly observed it in cases of the *sthenic* form.

Overcrowding may occur with, perhaps, as much frequency as in other habits of body, much depending upon the maxillary development. It has been observed that the children of gouty inheritance are apt to grind their teeth during sleep, and this habit may go on into adult life or mature years. So vigorous may this be that I have known the enamel, which is so strong in such persons, to be chipped and broken off by it. In colour the enamel is most commonly yellow, and white teeth are somewhat exceptional. The colour is apt to deepen a good deal in middle life. In texture it is very hard. The teeth are in every way vigorous and firmly planted, and if extraction has to be

teeth and the consequent pain."—'Clinical Lectures and Essays,' Sir James Paget, edit. 2, p. 372, 1879.

* I have sometimes observed that the teeth are small in size, though well formed, regular, and strong, with yellow tint of enamel.

practised the operation is as formidable in these cases as it ever can be.

There is a remarkable tendency for the teeth to be worn down on their free surfaces, sometimes showing the pulp cavity. This is quite in strong contrast with what is met with in the teeth of persons not arthritically disposed. It is often supposed to be due to habits of pipe-smoking, but this is plainly not always the cause of it, and it is almost as commonly seen in women as in men. It is certainly not always due to grinding in sleep.

There is also a great proneness for tartar to collect upon the teeth. Dr. Copland noted long ago that such incrustation indicated a tendency to gouty affection.* If the teeth are not regularly and properly cleansed this accumulation may reach extraordinary proportions, and, even with due care, collections will form along the inner gingival edges of the lower incisors. I am not aware that there is any peculiar chemical difference in the tartar of the gouty person as compared with that met with in others, and I feel indisposed to assent to Dr. Alfred Carpenter's statement that "lithate of soda is deposited in the circumdental membrane, and produces those diseases of the teeth to which the gouty classes are especially liable." I dispute the fact that these classes are especially prone to Dental diseases, and I know of no careful observations which have proved that lithic acid is deposited in the periosteum of the teeth. I have not been able to find any chemical reactions in the tartar from gouty teeth indicating the presence of lithic acid.

I have observed, in a good many instances, that *perfectly sound teeth* are apt to be shed in persons who inherit gouty constitution.

This is a very remarkable fact. A process of alveolar absorption appears to induce this loosening, though how this absorption comes about I am unable to tell. The last instance in which I noted this occurrence was in a young man aged twenty-six. A sound lower incisor tooth had been cast off, and the gum was absorbed along with the associated alveolar process. The gums were generally retracted, but the teeth were strong, yellow, and well enamelled. This man inherited gout, and had his first attack at the age of twenty-six. Amongst my gouty cases I find notes of several persons who have become prematurely edentulous, and of many who have lost several sound teeth, or suffered loss in this way, and also by complete decay.†

* 'Dictionary of Medicine,' vol. iii, p. 984.

† In a discussion which was held in the Dental Section of the International Medical Congress in 1881, upon the causes which led to alveolar absorption

With respect to cases showing caries, and also much tartar accumulation, I find that the majority have been careless persons, and more or less intemperate, and the significance of this fact for me is, that such habits distinctly lead both to worse gout and to much of the Dental caries. Temperate gouty persons—and there are large numbers of such people—in spite of common and prejudiced views to the contrary, have good, strong, and sound teeth as a rule. If they abuse their constitutions by intemperance they rapidly induce gouty cachexia. This is a very different matter from a gouty inheritance or predisposition, in which, with care, no overt or serious gouty trouble need necessarily supervene.

It is, therefore, an error to place all cases of gout in one category, and to affirm that in such instances one may naturally expect to find carious teeth and many other dental troubles.

There remains to be said something respecting tendency to decay in teeth in persons of the arthritic diathesis. Amongst these are to be noted many instances in which florid complexion, with dilated small vessels, together with other signs in the circulatory system, betoken the existence of the vascular or sanguine form. The corresponding cachexia is shown by a tendency to atheroma and degeneration of the blood-vessels. This, again, leads to further tissue degeneration, and hence the teeth are prone to suffer from imperfect blood-supply, and thus to decay in such cases. It is in this way, I conceive, that a good deal of the alveolar absorption, loosening, and caries of teeth met with in these persons is to be explained. The trouble arises from a defect in nutrition, due to the outcome of vascular changes. These changes are not due to the arthritic proclivity, as such, but attach themselves only to certain members of the great arthritic family, to wit, those of the vascular or sanguine variety.

I cannot doubt that erroneous opinions respecting the teeth of persons who are gouty, or are rheumatic, in varying degree, have been formed because the fact of commingled diatheses has been unrecognised or ignored. An inheritance of scrofulous taint, together with arthritic disposition, will materially affect the development and life history of every dental tissue, and the characters proper to each will prevail

and loosening of teeth, I find that no allusion was made to the frequency of this affection in persons of gouty habit of body. I find amongst my cases one of a healthy old woman at eighty-two, who inherited gout from her father and paternal grandfather. She first became gouty herself at the age of seventy, and has now deposits of urate of soda. Between her sixtieth and seventieth year she lost many of her teeth, which were quite sound, and gradually became loose. She is now quite edentulous.

according to the degree of heredity of each. Strumous taint appears to affect the enamel very materially, and there is special tendency to decay, the teeth being irregular, ill-developed, more or less serrated at the edges, and dingy in colour.

Inherited syphilitic taint will likewise modify the growth and form of the teeth of the arthritic, in the well-known manner described by Hutchinson, though the evils wrought here, *cætoris paribus*, are mischievous in less degree than in the case of strumous diathesis similarly cross-tainted.

The characters of the teeth in persons of rheumatic habit of body are certainly less remarkable than those which are noted in the gouty. The several tissues of the body appear to be less impressed by the conditions which lead up to rheumatic tendency than is the case in gout. Yet, for the most part there is much similarity, and I recognise amongst the features of rheumatic inheritance the presence of strong, hardy, and well enamelled teeth as the rule. This is not remarkable if it be true that both gouty and rheumatic predispositions are referable to the great arthritic (basic) family. In each case, however, the intervention and modifying influences of cross-taint and mingled diatheses must be considered.

Of the functional troubles of the teeth suffered by the arthritic but little need be said.

Sir James Paget has well described the painful state experienced by gouty persons in which the teeth feel as if loosened, and raised from their sockets, and are very tender when brought in contact—as if, he remarks, the alveolar periosteum was swollen.* This condition seldom lasts more than a day or two, and subsides without any marked effects. It may come on very suddenly, as is the habit with many gouty affections, and may generally be traced to cold or to some alimentary disturbance.

I think that I have observed a greater tendency in persons of this diathesis to suffer from radiating neuralgia, affecting many teeth in both upper and lower jaws, as the sequel to that form of severe nasal catarrh which is properly called *gravedo*, in which the cavities of the antra, the frontal, ethmoidal, and sphenoidal sinuses are involved. Teeth that have been stopped will commonly ache more than sound ones under these circumstances, but the pain is sometimes worst in the strongest and soundest teeth.

Retraction of the gums in an extreme degree seems to be generally associated with some measure of alveolar absorption,

* Op. cit., p. 372.

and much tartar is seen oftentimes on the exposed necks of the teeth. Amongst the poor such a state is seen in persons both of arthritic and of other dispositions. It is generally significant of gross neglect of the teeth; but these conditions of alveolar catarrh, osteo-periostitis, and loosening are also symptomatic of diabetic cachexia, and should lead to special investigation of the urine if other more obvious signs of the disease have not already been recognised.

It would be a matter of much interest to inquire into the condition of the teeth in countries where gouty disease is unknown. The best American authorities declare that they hardly ever see unequivocal gout, even in the practice of large cities. All the factors leading to its occurrence have not hitherto been present. They may come, and conspire to introduce it to generations yet to be born. Civilisation is not credited by Dental Surgeons with having brought blessings along with it for the development and life-history of the teeth—rather the reverse, indeed; but the progress of their science has done much to repair the ills incident to exposure to luxury. It is a great matter that the dental textures are studied in relation to their whole anatomy and physiology, and it will be an additional advance when the great doctrines of diathetic predisposition and of scientific physiognomy are carefully worked out and applied to practice. I venture to hope that in this brief communication I may have contributed something towards such a study, and may enlist the interest of Dental Surgeons in the subject.

DEATH UNDER CHLOROFORM.

A LADY, well known in private circles as an accomplished amateur musician, who frequently performed in public for charitable objects, died at Inverness, on the 10th instant, whilst under the influence of chloroform. The anæsthetic was administered in order that three decayed teeth might be painlessly extracted. At the patient's own request, chloroform was administered in the usual manner, and two teeth in the lower jaw were successfully extracted. The last tooth to be removed was an upper molar; in the process of its extraction, the lady showed signs of returning consciousness by lifting up her hands; but she immediately afterwards expired, apparently from syncope. The deceased, on several previous occasions, had had teeth removed whilst under the influence of chloroform.—*Brit. Med. Journ.*

CYSTIC TUMOURS OF THE JAWS, AND THE ETIOLOGY, GENERAL CHARACTERS, AND RELATIONS OF TU- MOURS.

By F. S. EVE, F.R.C.S.

ERASMUS WILSON LECTURER AND PATHOLOGICAL CURATOR OF THE MUSEUM
OF THE COLLEGE, AND SURGICAL REGISTRAR TO
ST. BARTHOLOMEW'S HOSPITAL.

(Continued from p. 459.)

LECTURE III (*continued*).*

Permit me now to call your attention to a theory of the mode of origin of tumours, which has been advanced by Professor Cohnheim.† He endeavours to prove "that a fault, an irregularity of the embryonic rudiment, is the true cause" of the tumour-formations; that, at an early stage of embryonic development, more cells are produced than are necessary for the formation of the affected part; so that a certain quantity remain over unused, of perhaps only the minutest dimensions, but having a great proliferative capability, on account of the embryonic nature of the cells. The period of the excessive production of cells may probably be referred to a very early stage of development, possibly to the period between the complete differentiation of the blastodermic layers and the perfect formation of the rudiments of the particular organs. Possibly, the superabundant cell-material is distributed more or less generally over a histogenetic embryonic layer, or is confined to a single spot, so that the morbid growth may affect an entire system, such as the osseous or cutaneous; or may be confined to a single organ. He concludes "that a fault, an irregularity of the embryonic rudiments of the organs and tissues, is the true cause of the later tumours."

The tumour-rudiment may remain latent for an indefinite period, until stimulated to growth by an increased blood-supply, from any cause whatever. A diminished resistance in the surrounding tissues, as in the atrophy of advancing age, is also supposed to favour the growth of a tumour rudiment.

Professor Cohnheim supports his theory by reference to the teratomata and many congenital tumours, as moles, angio-

* Given at the Royal College of Surgeons, June, 1882. The latter part of the Lecture, treating of the relation of tumours to each other, has been extended, but the conclusions have not been altered.

† Ueber, 'Allgemeine Pathologie.'

mata, and multiple enchondromata, fibromata, and lipomata of the subcutaneous tissue, which he has observed in new-born infants; also, other tumours occurring in the earlier period of life, as the muscle-tumours of the kidney, gliomata of the retina, and sarcomata and cancers of various organs. The most conclusive example is furnished by the dermoid cysts of the subcutaneous tissue. Although their existence can be made out by dissection in infants, they rarely attract attention until puberty. These cysts, lined with epidermis, and often containing hair, are probably, as Lücke pointed out, derived from an abnormal involution of the external layer of the blastoderm into the middle layer; this displacement occurs in those localities where there is a normal involution of the epiblast, or where the closure of fissures or folds takes place in the embryo, as around the orbit, in the lines of the brachial fissures, or in the median line of the thorax.

He ingeniously applies his theory for the elucidation of many of the obscurities surrounding the origin and causation of tumours. The following are among the principal conclusions at which he arrives. This theory renders comprehensible the occurrence of tumours in any tissue, whether capable of production during the whole of life as epithelium, or as connective tissue; or such as only increase on the application of a physiological impulse, as the muscular and glandular tissues of the uterus and breast.

The liability of particular localities to cancer, such as the lips, orifices of the stomach, the rectum, the os uteri, upon which Virchow founded his hypothesis of irritation, receives an ingenious explanation, by the supposition that a reason exists in the embryonic development of the part. Cohnheim points out that at or near these orifices a complication occurs in development, either an invagination of the epiblast, a union of this with another epithelial layer, or a transition from one form of epithelium to another; in these parts, he thinks a slight irregularity may easily come about, leading to the formation of an excessive mass of epithelium which may furnish the elements of a tumour. Further, the origin of the heterologous tumours, viz. those which differ in their structure from the tissues in which they lie, is explained by the theory of *displacement* of embryonic tissue; as, for example, the dermoid cysts of the skin already mentioned; the striped muscle tumours of the kidneys, which he believes to be produced by a faulty segmentation of the protovertebræ; and certain heterologous tumours occurring in some of the principal organs of the urogenital system, as the enchondromata of the testicle, and the dermoid cysts of the ovary,

testicle, and pelvis; the original of these is attributed to the close connection existing between the Wolffian body, with the epiblast in the one side, and the protovertebræ in the other, a relation which may lead to the admixture of embryonic cells formed in excess from either of these structures with the rudiments of the urogenital organs. In a similar manner, an explanation of the enchondromata of the parotid gland is furnished by the inference, that they are derived from misplaced portions of Meckel's cartilage. Again, the supposed embryonic nature of the tissue comprising the sarcomata is referred to the early stage of development at which their rudiments are believed by Cohnheim to be cut off; he observes, that the histological prototype of a spindle-celled or round-celled sarcoma must be sought in the first beginnings of the development of the connective-tissue organs. The tumour-rudiments cannot, he thinks, be expected to form tissue as perfect as the normal structures, owing to the differences existing between the conditions of their growth, both as regards the time and the place of their development.

I have endeavoured, as far as time will permit, to give an impartial account of Cohnheim's exposition of his theory, and the manner in which he applies it for the explanation of the origin of tumour-formation.

Some facts on which the theory is based, render it highly probable that the rudiments of a large number of tumours appearing in the earlier part of life are congenital, perhaps of a larger number than we are disposed at present to admit.

Maas has found, among 278 cases of tumours, 26, that is 9.3 per cent., in children, which must be considered congenital. But no facts have at present been brought forward which even remotely indicate that the sarcomata and cancers of later life originate from pre-existing rudiments formed in the embryo.

Such an assumption appears to me altogether incompatible with our knowledge of the life-history of the individual structures and elements of the body. For from the time of their earliest formation until death, growth, and even development, of the individual units formed by growth goes on continuously in the epithelial and glandular tissues of the mucous and cutaneous surfaces. It is in these structures, and especially in the breast and uterus—which possess until late in life a remarkable reserve of formative activity—that tumour-formations most commonly occur. The reparative power is capable of producing in the most advanced age highly organised tissues such as bone, connective tissue, and epithelium, in a manner conforming to

the general type and outline of a part, as is seen in the union of fractures and the healing of wounds; and surely, such a cellular activity would, under certain conditions, be capable of forming a tumour, which truly possesses the greatest capacity for growth, with the most limited power of development. The following facts, also, appear to me to be opposed to Cohnheim's theory. All cartilaginous tumours of bone are not composed of embryonic cartilage, nor do they all originate from the centre of the shaft, or the centre of the epiphysis, as those congenital tumours composed of foetal cartilage invariably do. For many cartilaginous tumours are hyaline, and originate from the intermediary cartilage, and others originate in the periphery of the shaft. Again, if all tumours of bones were derived from embryonic rudiments, they would begin in the long bones, either near the centre of the shaft or that of the epiphysis; for any embryonic rudiments of the foetal shaft would gradually be separated from the epiphysial line by the growth of the extremities of the diaphysis, and from the surface by the formation of fresh layers of bone beneath the periosteum. Similarly, a rudiment remaining in the epiphysis would gradually be separated from the line of junction with the diaphysis, and from the surface by a similar increase of the peripheral structures. But, on the contrary, we observe that by far the larger proportion of the sarcomata of bones originate in the latest formed parts, viz. either beneath the periosteum, or at the line of junction of the epiphysis and diaphysis; in fact, precisely in those positions where embryonic rudiments would be least likely to be placed.

Nor is it necessary to go back to embryonic life to find the elements from which the sarcomata of bones are formed. These tumours much more nearly resemble the imperfect stages in development of the structures formed in the processes of repair and inflammation, than those which we may presume would be produced from the embryonic round cells, constituting the rudiments of the connective tissues, and which, Cohnheim observes, are only found at the earliest period of embryonic life; these embryonic cells, if tending to a higher type of development, would produce foetal cartilage and not osseous tissue, as is observed in most sarcomata.

Further, the history of the development of the breast renders it inconceivable that the rudiment of an adenoma or a cancer can be actually formed at an early stage of foetal life; the first rudiment of the gland itself does not appear as a bud-like ingrowth of the epiblast until the fifth month of foetal life, and it is only represented at birth as a

delicate rosette of radiating rudimentary gland tubes.* And if the rudiment of a cancer actually be congenital, how is it that it does not develop under the physiological incitement of puberty?

(*To be continued.*)

SURGEONS *VERSUS* DENTISTS PRACTISING DENTISTRY.†

By HENRY BLANDY, L.D.S.Ed., Nottingham.

THERE is considerable agitation in the minds of some persons practising Dentistry,—in the minds of some surgeons and in the mind of the editor of the ‘Lancet’—as to whether a medical, or a specially Dental education as laid down by the Royal College of Surgeons, will most contribute to the public welfare, and to the success in life of the practitioner. It may be well that our Society of Dentists Practising Dentistry, should refresh its memory by the consideration of bygone struggles and present contentions, in order that it may be prepared for future difficulties.

The Association of Surgeons Practising Dentistry, or as it has styled itself, “The Association of Dental Surgeons Legally Qualified,” claim that by the education they recommend, they are able to provide more competent Dentists. Before proceeding to lay before you my views on this question, and briefly drawing your attention to the origin and objects of the above Society, I will refer to a letter to the ‘Lancet,’ copied into the ‘Journal of the British Dental Association’ for March, 1883, from Mr. S. Hamilton Cartwright, who is professor of Dental Surgery at King’s College, and I believe was, or is hon. secretary and treasurer to the above association.

The occasion for this letter was simple. A shipload of one hundred and eleven passengers on board the Chimborazo, arriving in England, signed a protest against alleged bad and putrid food, most of them having suffered from acute diarrhœa. A gentleman, one of their number, was subpoenaed to give evidence in support of the action against the owners. This gentleman being a Dental Surgeon, is said to have been ruled incompetent to give scientific evidence by Mr. Justice

* See Kölliker and A. A. Bowlby, ‘British Medical Journal,’ 1882.

† Read at the Annual General Meeting of the Midland Branch of the British Dental Association at Shrewsbury, on the 25th April, 1883.

Field. The 'Lancet' noticed the occurrence. This was the heaven-sent opportunity for Mr. Cartwright to rush in with his estimate of the "value of the evidence of a third class 'emigrant,' calling himself a 'Dental Surgeon,' who presumed to offer himself as a medical witness." Mr. Cartwright agrees with the judge, and the 'Lancet,' in saying that a "Dental Surgeon cannot be regarded as an authority on the subject of acute diarrhœa, alleged to arise from bad food supplied by the owners of a passengers' ship." Mr. Cartwright, "full of anger, full of wrath," hastens to rejoice that "he belongs to the Association of Surgeons Practising Dentistry—he was medically and legally qualified—and quite content with the noble title of surgeon." He then has a fling at Dental reform and registration, and at the gentlemen who have worked so hard to promote the cause of Dental elevation; but, he entirely omits to prove there was no diarrhœa, which is the pith of the whole matter!

Mr. Cox, the witness referred to, has since written to say that he was not a third class emigrant. That he was not a self-styled Dental Surgeon, but an L.D.S.Eng.; and that he did not offer a medical opinion on the cause of the diarrhœa.

This is a sample of the improved code of ethics and professional feeling, which Mr. Cartwright's society is mainly established to cultivate. But let us return to the consideration of the origin and objects of the Association of Surgeons Practising Dentistry.

This society was established on or about the 19th of January, 1876, with Mr. S. Cartwright, as President, and Mr. S. H. Cartwright, as Secretary.

In the April number of the 'British Journal of Dental Science,' 1876, is a correspondence in which Mr. S. H. Cartwright invites Mr. C. S. Tomes to join that society as an original member, enclosing a list of the objects of the association, officers, &c.

Mr. Cartwright dates his letter from the "Association of Legally Qualified Dental Surgeons." The enclosed resolutions are:

1. Title of society.
2. That it is founded to promote objects not contemplated by any existing Dental society.
3. That its chief objects shall be:
 - (a) The establishment of an improved code of ethics.
 - (b) The endeavour to encourage a higher educational standard, both general and professional, for those who may hereafter practise the special branch of Dental Surgery.
 - (c) The furtherance of modes of practice compatible only with the highest professional status.

4. That in order to carry out the above objects the Association shall, in its commencement, meet at least six times in the year.

Omitted from list sent to Mr. Tomes, but inserted in 'Lancet' ('Cosmos,' 1876, p. 269). That for the present it is not contemplated to publish any regular Transactions of the Association. (It has been a long "present." I cannot find that any transactions, or even a list of members, has been published during the seven years which have elapsed.)

5. Appoints the ordinary officers.

6. That all qualified medical practitioners be eligible for membership.

7. That the association shall also consist of hon. members. Then follows a list of officers.

It may be here stated that a number of medical men admitted under rules 6 and 7 helped to swell the ranks of this society, and must proportionately damage the authority of its dictum upon Dental affairs.

Mr. C. S. Tomes having heard from one or two sources that his father and himself had been thought to have been participators in a movement which they in all respects disapproved, sent this letter of invitation and his reply to the 'British Journal of Dental Science' for publication.

The reply dated March 30th, 1876, states:

"I have no wish to become a member of the new association.

"I do not believe a high standard of thought and conduct can be inculcated in the minds of those who have it not to begin with, and those who have it will gain little by its codification. That higher education was already inaugurated by tried and trusted hands, whose names were not on the list of office-bearers in this society, while there were names on it who had not consistently supported efforts in this direction."

Mr. C. Tomes goes on to say ('British Journal of Dental Science,' p. 233, April, 1876):

"Whatever any one may say to the contrary, the L.D.S. diploma is the only one which indicates that the holder has received an education and passed an examination in the matters appertaining to our speciality, and desirable as may be the extra year of hospital study which the M.R.C.S. implies, how much of general surgery do we keep up, and how far are we to be fairly entitled 'competent surgeons' after ten years have elapsed from our having acquired the diploma?

"An association which finds its qualification for membership in a degree other than the L.D.S., and purposes to be

going to further modes of practice, compatible only with the highest professional status, &c., is in its very existence a slight to the L.D.S., and I observe that although this degree is held by, at all events, some of your office-bearers these letters are not appended to one single name.

“Before I could join your association, my own self-respect would require me to resign the chair and its emoluments which I hold at the Dental Hospital, because that is a school directly concerned in the training of students for the L.D.S. and not for the M.R.C.S., and were I to displace the L.D.S. into a secondary position as a qualification for the Dentist, then and not till then, I conceive, would it be consistent for me to endeavour to displace the Dental Hospital by the establishment of complete Dental schools at every general hospital, and this would be a natural outcome of joining your association, &c.”

In the May number, 1876, Mr. John Tomes writes that he “must decline joining, under the firm conviction that an exclusive association such as this will be powerless for good, but capable of doing great mischief. The position taken by the Association will be regarded as an offensive assumption of superiority on the part of its members, for which there is no justification,” &c. How soon this opinion was justified we shall see.

In the June number of the ‘British Journal of Dental Science,’ 1876, we find Mr. Hamilton Cartwright has been engaged in a correspondence on the administration of nitrous oxide gas in the ‘Lancet,’ which draws from the editor these remarks:—“It should not be forgotten that a Dentist is unqualified, whatever his experience or manipulative ability may be, if he is not possessed of the knowledge requisite to diagnose and treat the symptoms of general disease. In a word, he is practically incompetent in all cases in which tooth symptoms are dependent upon, or have originated in, a morbid condition of the body as a whole, or of the teeth themselves as organs which suffer in sympathy with the general system. No mere manual dexterity can possibly make amends for the lack of medical knowledge. The non-surgical Dentist is, of course, wholly incompetent in a case requiring the use of an anæsthetic. The one true remedy for the existing state of matters in respect to Dentistry, is supplied by the Association of Surgeons practising Dental Surgery. The members of this association are first surgeons and then Dentists,” &c. This was putting the case as strongly as the Association of Surgeons practising Dental Surgery could wish. This appeared in the ‘Lancet’ on May 27th, but on June 3rd there appeared a letter.

"SIR,—We, the undersigned qualified surgeons engaged in the practice of Dental Surgery, beg to emphatically protest against the inference conveyed by your editorial article entitled "Dental Anæsthetics and Dental Surgeons," in your issue of May 27th. In making the statement that the one true remedy for the existing state of matters in respect to Dentistry is supplied by the Association of Surgeons practising Dental Surgery, and further that the public will consider their own interests in confiding their cases to such hands, and by so doing secure safety, &c., the inference is conveyed that this new association is a representative body, including within its ranks the larger and more influential section of fully qualified surgeons who are engaged in the practice of this speciality. Leaving out of present consideration the injustice done to the holders of the Dental licentiateship, and the many other important questions raised in the article, we beg entirely to disclaim the association, to the formation of which we are opposed, and to emphatically deny its claims to in any way represent the body it professes to represent, namely, the fully qualified surgeons engaged in the practice of Dental Surgery.

"As it is believed that the number of fully qualified surgeons practising Dentistry in the United Kingdom does not greatly exceed fifty, the following twenty-five signatures of London practitioners only, have been deemed sufficient. More might have been obtained, but at the cost of delaying the insertion of this disclaimer, which did not appear advisable.

"(Signed) T. A. ROGERS, C. TOMES,
 "E. SAUNDERS, C. VASEY,
 "J. TOMES, H. J. BARRETT, &c.

"341 p., June, 1876."

Subsequently the colleges of surgeons of Edinburg and of Ireland and Glasgow, established examining boards and received candidates for their diplomas, *sine curriculo*, under certain specified conditions.

A great many gentlemen have availed themselves of this privilege (I hope more will before the gates are closed), and in doing this have carried out the desire of the Reform Committee and have raised the position of their profession. They have not only proved themselves masters of the practical details of their profession—surgical, medical, and mechanical—but have acquired such general technical, practical, and scientific knowledge in chemistry, physiology, anatomy, and *materia medica*, as the various examiners demanded. To attack the L.D.S. diploma as a guarantee of fitness to practise Dental Surgery, within its own proper limits, is to attack

the credit of the college granting it and the honour of its examiners, as well as the honorable body of gentlemen who hold these diplomas.

(To be continued.)

Reflections from the Surgery.

FRACTURE OF THE SUPERIOR MAXILLA.

Reported by W. F. CORNELIUS, L.D.S. Eng.,

HOUSE SURGEON TO THE DENTAL HOSPITAL OF LONDON.

ON April 6th, Benjamin S—, æt. 11, was admitted to the London Dental Hospital, suffering from a compound fracture of the superior maxilla.

The injury was the result of a street accident three weeks previously, in which a waggonette passed over the patient's head.

On examination it was found that the fracture included the alveoli of the two upper central and right lateral incisors together with a portion of the body of the superior maxilla, the fractured portion having become so displaced backwards that the teeth carried by it were projected considerably behind the lower incisors, which were acting to prevent its return to the normal position.

Under the direction of Mr. C. E. Truman, who had charge of the case, a vulcanite splint was prepared; this raised the bite, and a pad of gutta-percha was placed on the splint beneath the displaced portion of alveolus, which served to force it into its normal position on closing the mouth.

Under the superintendence of Mr. Hooper, who acted as dresser to the case, the mouth was kept frequently syringed with a weak solution of carbolic acid; this was continued until May 5th, when the splint was removed, satisfactory union having taken place.

British Journal of Dental Science.

LONDON, JUNE 1, 1883.

THE gratifying scene which was witnessed on the 23rd ultimo at the Beethoven Rooms, on the occasion of the distribution of prizes to the successful students at the National Dental Hospital and College, cannot but go far to prove the deep interest that is taken in Dental education. The company, which numbered over one hundred and twenty friends of both the metropolitan schools, had the opportunity of hearing from the lips of the distinguished Chairman (Sir Spencer Wells, Bart.) what had been done in the science of Dentistry during the last twenty-five years, and, as a veteran crowned with honours, he pointed out one of the best possible ways of leading an honourable professional life.

Such words are most welcome, and we hope those young men who heard them will make an example from the precept.

Competition in science is most desirable, it may be a keen struggle between man and man, but, as Sir Spencer told us, there it must end. Whilst seeking fame all personal opposition of an offensive nature must be abandoned. The only allowable competition is in the substitution of good work for bad.

The first attempt at Dental education was substantially supported by Sir Spencer Wells, who delivered with Dr. Benjamin Ward Richardson the first courses of lectures on Dental Surgery in connection with the College of Dentists. It was found necessary by some to oppose the working of the above college, and to get the test of competency to practise from the Royal College of Surgeons of England, and with the desire to forward the interests of the profession the gentlemen of the College of Dentists retired in favour of the College of Surgeons. The outcome of that

movement has been the establishment of the Odontological Society, the London, National, and Provincial Dental Schools, and the British Dental Association with its branches, and all these institutions have the spirit of opposition for the advancement of Dental science only. Our schools send up their pupils with pride at the way they have been prepared, and the Odontological and kindred societies give the opportunity to earnest thinkers to give to the world the result of their observations.

Manipulative Miscellany.

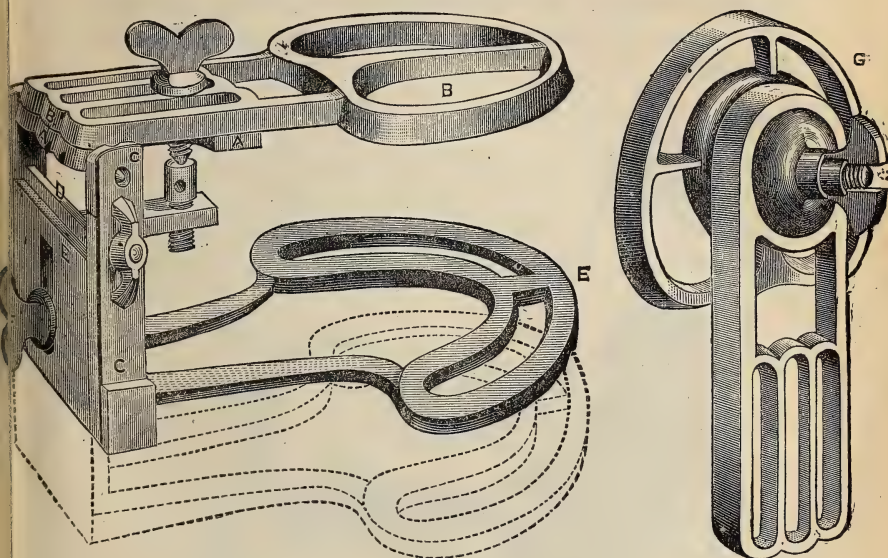
All instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month, they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits, and without any intention or wish to pit one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

H. D. JUSTI'S NEW ARTICULATOR.

MR. H. D. JUSTI, of Philadelphia, has immensely improved his already fairly perfect articulator, by adding a ball-and-socket attachment to the superior frame G—the invention of Dr. D. L. Overholser—the utility of which may be readily comprehended.

When the “bite” has been taken for fitting up a set for trial, the models are to be attached to the articulator in the usual manner; should it be thought desirable to raise or depress that “bite” perpendicularly the thumb-screw acting on the slide plate D controls such movements. But it is after the set has been mounted and tried afresh that the chief advantage of this articulator is realised, for should the bite be a little too forward or backward, to the right or left, the thumb-screw on the top admits of any such movements being made by sliding the stage B on the platform A, whilst the thumb-screw on the ball-and-socket admit of any con-

ceivable adjustment of a tilting or tipping nature. Thus by merely loosening these screws any amendment of the articulation can be immediately followed without resetting the models on the frame.



The superior arm hinges or cone points which give a perfectly steady motion, and can be readily detached from the remainder of the frame by turning a button on the side spring c c which enables the one cone point to be lifted out of its socket up a groove made for that purpose.

THE SWINGING DENTAL CHAIR.

THE character of this chair is denoted by its name. It is so constructed that the upper part hangs within the lower part upon two bolts situated below the arm rests, and so nicely balanced, when the patient is seated in it, that it can be swung backward and forward very easily, and fixed in any position by means of a foot lever.

The chair is raised by the handle A; the powerful spiral spring C under the seat assisting the operator to raise it with the least exertion.

The back, which is held in position by two thumb screws, can be moved backward and forward as may be desired, and for tall patients it can be lengthened by adding the upper piece shown in illustration, which usually serves as a seat for children.



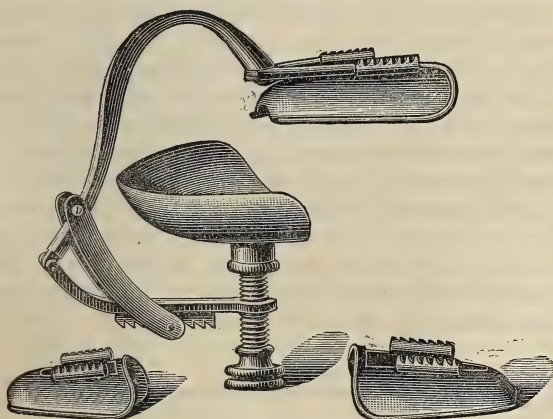
The foot rest is adjustable, and can be shortened by lifting a nickelled handle and drawing it forward towards the chair.

A closing ring spittoon holder, not illustrated, is attached to the arm rest, in which is fitted a nickel-plated spittoon.

Altogether the chair is elegant and well finished, and Messrs. Ash and Sons, who are manufacturing it, have bestowed their usual care and attention in perfecting all its parts.

AN IMPROVED TONGUE HOLDER.

THE following illustration gives a correct idea of the careful way Mr. C. Kuehns, of Hanover, has set to work to construct his tongue compressor. We have tried it in several cases and find, with the exception of occasional nausea, that



it faithfully carries out what it professes to do. By a series of movements the fixing frame can be brought into almost any position, and a mouth of any size can be fitted with one of the three tongue plates, so that no difficulty is left to obtain a comfortable adjustment of the whole apparatus.

TETANUS FROM A CARIOUS TOOTH.

A VERY remarkable case of fatal tetanus, ascribed to the irritation of a carious tooth, was reported some time back in one of the West of England journals. The patient was a shoemaker, residing at Bridgewater, who had enjoyed excellent health until he was seized with violent pain in the side of his head. He was treated in the first instance by a chemist for neuralgia, but the symptoms becoming aggravated, Mr. Kemmis, a medical practitioner, was called in. He found the patient insensible, with his jaw locked and immovable. Treatment, however, was unavailing; the man remained insensible, and died in a few hours. At the inquest Mr. Kemmis stated it as his opinion that death was due to tetanus brought about by a decayed tooth, and he characterised the case as a most extraordinary one—a statement with which every one will agree. Simple trismus from some form of dental irritation, generally the difficult eruption of wisdom teeth, is not a very rare phenomenon, and cases of it will be found recorded in several of our back numbers. But general and fatal tetanus from a similar cause is happily of extremely rare occurrence, Mr. Tomes has recorded a case which was apparently due to the operation of pivoting, and Wedl has mentioned one in which tetanus followed the extraction of a tooth. In Mr. Tomes' case, as in the one the particulars of which are given above, death occurred very soon after the first appearance of muscular spasm.—*American Journal of Dental Science.*

Reports of Societies.

NATIONAL DENTAL HOSPITAL AND COLLEGE.

THE Sixth Annual Distribution of Prizes to the successful students at the above Institution took place on the 23rd ult. at the Beethoven Rooms, Harley Street, Sir. T. Spencer Wells, Bart., in the chair, in the presence of over 120 ladies and gentlemen.

The DEAN being called upon, read his Report, in which he stated:—"In presenting my Sixth Annual Report it is

with much pleasure that I, on behalf of the Executive and Staff, can announce the continued success, prosperity, and progress of the School. That satisfactory statement is based upon the following facts:—During the past year, of the seven students who presented themselves at the several Examining Boards, each one was successful—four having obtained the Dental qualification of the Royal College of Surgeons of England, while three others have taken that qualification at Edinburgh, Glasgow, and Dublin respectively. I am furthermore able to again draw attention to the unbroken “charm” of not one of our students having yet failed at an examination. Also, the quality of the work done by our students—work of both theory and of practice—is, upon the whole, very meritorious. Written questions and answers have been published that the profession at large might judge of their merits; and numerous poor patients are a living testimony to the advantages of high class operations in Dental Surgery. Then, again, the number of students receiving instruction in this institution continues to slowly increase.

“The foregoing details cannot be classed as other than eminently satisfactory, and we trust the Staff will ever be found fulfilling, without ostentation, their duty as teachers, whilst our past and present students illumine the profession, and reflect credit upon the National Dental College.

“It was with extreme regret that we were obliged to accept the resignation of our esteemed colleague Dr. Thompson, owing to his leaving this country. The valuable services that he rendered to the institution were universally appreciated, and much of our success was due to his teaching. The Chair of Operative Dental Surgery thus vacated is now filled by Dr. W. St. George Elliott, and we feel that in him we have a highly efficient and respected co-worker who will maintain the importance of the position that the subject occupies in our School.

“The twelve Prizes and Certificates of Honour have been awarded to seven students. Mr. Chas. Rose has to receive the “Rymer Gold Medal” for General Proficiency, the Prize Medal for Dental Anatomy and for Operative Dental Surgery, also the Certificate of Honour for Dental Surgery. Mr. Carter will receive the Prize Medal for Dental Mechanics, and Mr. Batten the Certificate of Honour. Mr. Penrose, who last year received the Prize Medal for Metallurgy and for Dental Mechanics, has been awarded the Prize Medal for Dental Surgery. Mr. Duncan F. Wright will receive the Prize Medal, and Mr. Frederick Wright the Certificate of Honour for Metallurgy; and Mr. Mapplebeck

will be presented with a Certificate of Honour for Operative Dental Surgery and for the best piece of Mechanical Work.

"The distinguished baronet who presides over our proceedings of this evening has for the past quarter of a century given a helping hand to the Dental profession. In the early days of professional advancement by education and examination he was associated with and took an active part in the work; and he has also been, since its foundation in 1861, a Consulting Surgeon to the National Dental Hospital. Highly valued as those services have been, they sink into comparative shade in the radiance of his inestimable benefits to womankind in particular and to humanity at large. The executive of the institution feel proud to have this opportunity of offering sincere congratulations to one whom they may regard as a colleague, and who is not only so eminent in his profession and so highly esteemed, but who has recently so deservedly received hereditary rank by the gracious favour of the Queen."

After the prizes had been distributed,

The CHAIRMAN said—Last night, ladies and gentlemen, on arriving in England after a call to Germany I received this programme, and I was rather startled to find that at the end of the presentation of prizes I was to deliver an address. The only consolation I had was that I saw the proceedings were to commence at eight o'clock, and that a very attractive programme of music was to commence at half past, and seeing that there were a certain number of prizes to be given away, and a Report to be read by the Dean, and speeches made by the teachers, I saw very plainly the time at my disposal would not be very great, and that I should not have to trespass very long upon your patience. And I really do not intend to because I believe the music is quite ready to commence, and the programme appears so extremely attractive, that I shall not detain you more than two or three minutes. I do not intend to read this book quite through to you, especially as it is so far unpublished and unfinished, but as it happens to be one of my own, I may perhaps, just read, not to you, but to the gentlemen who have received these prizes and to the other students of the college one or two sentences. But I would also read you a sentence or two from a book which I bought at the railway station coming over, written by a lady, and a great deal better book than some of the ladies of the day write. I read them not in the way of a sermon exactly but rather in the way of a text which at your leisure any of you young gentlemen may fill up if you so please into a sermon. One is this, that the author says of one whose works are reviewed here: "He held that the

first business and profession of every man is to be a Christian gentleman, and that the acts and processes by which he gains money should always be a secondary part of his life and character ; that, secondly, so long as the occupation is honest it does not much signify what that occupation happens to be, it can be made mean or dignified according to the personal character of the man who pursues it." (Hear, hear.) That is just one sentence. Here is another: talking about the difficulties which some men who have not got a good start in life derived from their ancestors may suffer under, and encouraging men who have no such advantages to work on in the hope that in the end they will attain all they wish for. "It is not ignoble pride to be proud of one's ancestors, but it is a nobler pride to make our descendants proud of us." (Applause.) Now I think the way in which the students of this college have been proving that they have been working will show that they may, and probably will before they come to the close of their life, make their descendants proud of them. (Applause.) I will not say much more upon this point, but I should just like to read to you an extract from the work of one of our American cousins. At the close of a long life, after, as he says, more than half a century's work in Boston, he writes to an old friend and says: "We have tried an experiment, and I am inclined to state to the young men of our profession what it was and what have been its results. You and I began our active lives in this city nearly at the same time. It was when Boston had about one sixth of its present population, and I suppose much less than one sixth of its present wealth. We were so circumstanced as to be peculiarly rivals. Our business led us across each other's paths every day for a long series of years. What one gained the other seemed to lose. It would have been very easy for us to have got up a petty quarrel at any moment; and having once begun we might each have got partisans, and all the usual entanglements to such cases appertaining might have followed. Happily we pursued a different course. We met together with the feelings we had as fellow students. We took much delight in consultation and discussion on professional subjects, and were ever ready to help each other. We have indeed maintained a strong personal interest in each other's welfare, and promoted each other's happiness. We do not resemble each other in temperament, and cannot see all things alike. From this cause, and not always looking at objects from the same point of view, we often differed in opinion. But we have always agreed to differ. We have not often disputed, and never have quarrelled on

account of this difference of opinion, nor on any other account. In our intercourse with the sick each has given the other credit for what was good in him, instead of studying and publishing the other's faults. In every work for the promotion of medical science or for elevating the profession, we have co-operated heartily, neither of us trying to push the other aside. And thus it is that being now, as regards age, in the front rank of our own profession, we have continued to this day on terms of intimacy and friendship. This is something to rejoice in and something for which we may properly thank God; and I know you will join me in giving thanks reverently. As we are near the end of our journey, I hope I may be excused for stating this experiment and its result. I would show to young men how grateful these results are. I can say to them that our interests have been promoted by our friendly treatment of each other; that each of us have gained by it much more than either of us could have done by the sharpest quarrels. If they believe me, any two of them placed side by side as we were may be induced to try the plan of a peaceful competition." (Applause). Think well on this, gentlemen. Remember that the character you make here will cling to you in after life. If you are known as idle or jealous or quarrelsome now, it will be hard indeed for you to shake off the evil reputation hereafter. But if you are honourable, friendly, and industrious, if you study diligently, if you honestly endeavour to do unto others as ye would that they should do unto you, you will carry with you into the world the good name you have earned here and deserve—and, believe me, very few really deserve who do not actually obtain—both success and happiness. (Applause.)

Mr. WEISS.—Ladies and Gentlemen, we have one duty yet to perform, and it is a pleasurable one. Personally it is a very great pleasure to me to propose a vote of thanks to Sir Spencer Wells for his kindness in occupying the chair this evening. It recalls to me very nearly a quarter of a century ago, when Dentistry was showing itself desiring to make for itself a solid and firm position in the world. Sir Spencer Wells is well known to us from the interest he took in the movement at that time, and it is very gratifying to see him now more particularly, presenting prizes to the youthful students at a period when our profession may be said to have established itself in the good opinion, not only of those who are benefited by it, but of the whole professional world. I am sure we all heartily thank our Chairman for attending here this evening. (Applause.)

Mr. WOOD.—In seconding the proposition that my friend Mr. Weiss has moved. I can heartily endorse all that he

has said. I, too, remember the time that he has referred to, when our distinguished chairman laboured so heartily for our welfare. The seed that he assisted then in sowing has become most fruitful in its results, and I think the knowledge that such is the case must be a satisfaction to him. I heartily second the proposition.

The CHAIRMAN.—I can only say it has been a very great pleasure to me to come here to night, and to renew the acquaintance that began twenty-five years ago with the College of Dentistry. I well remember the lectures I was then enabled to give in connection with Dr. Richardson, and I am quite sure Dr. Richardson would bear me out in saying that we never had a more attentive class. Medical students, as a rule, are not wonderfully remarkable for very great industry, or great regularity in attendance, or possibly the amount of knowledge that they carry away with them from lectures; but we were extremely pleased and gratified, I must say, by the way in which our lectures were received by the students of the College of Dentistry; I always retain a pleasant recollection of those days, and it has been a very great pleasure to me to-night to renew that acquaintance. (Applause.)

MIDLAND BRANCH OF THE BRITISH DENTAL ASSOCIATION.

ANNUAL GENERAL MEETING.

THE Annual General Meeting of the Midland Branch was held at the Raven Hotel, Shrewsbury, on Wednesday, April 25th, Mr. R. E. STEWART, Liverpool, President of the Branch, in the Chair. There were present, amongst others, Mr. Roff King, of Shrewsbury, President-Elect; Mr. W. H. Waite, Liverpool, Hon. Sec.; Mr. S. Wormald, Treasurer; Dr. Walker (London); Messrs. Thomas Wormald (Oldham), William Dykes (Manchester), W. E. Harding (Shrewsbury), Leonard Matheson (Manchester), R. F. H. King (Newark), J. Renshaw (Rochdale), D. A. Wormald (Bury), Thomas Murphy (Bolton), J. S. Crapper (Hanley), Thomas Mahoney (Sheffield), D. Dopson (Liverpool), Henry Blandy (Nottingham), Richard Rogers (Cheltenham), William Shillinglaw (Birkenhead), J. W. Lloyd (Liverpool), W. H. Jewitt (Liverpool), T. Gibbons (Stockport), Thomas Dilcock

(Liverpool), E. H. Williams (Manchester), A. King (Worcester), C. Sims (Birmingham), W. H. Ridge (Stafford), &c.

The PRESIDENT commenced the business by congratulating the meeting upon the largeness of the attendance, and upon the very fine weather they had for their visit to Shrewsbury, and expressed the hope that the meeting would pass off as well as it promised to do with such a commencement.

It was unanimously agreed that the minutes of the last annual meeting be taken as read, the report of proceedings having appeared fully in the pages of this Journal.

The HON. SECRETARY said he had received a very large number of letters from members and friends unable to be present. The Report of the Council which he read was as follows :

“ The record of the past twelve months bears evidence of material advance in the growth of our Association, and the furtherance of its objects. The meeting of our branch at Leeds, in April last, was well attended, successful, and agreeable, and the members in that district are sensible of permanent influences, salutary and progressive, directly traceable to our visit. Three months later the Annual Meeting of the Western Counties Association, held at Cheltenham, was not only brilliantly successful, thanks to the energy and princely hospitality of the President (Captain Rogers), but it was signalised by a most important step, viz. the determination to make the Western Association a branch of the British Dental Association. By this resolve a considerable accession of members and a highly influential support have been gained by the Association.

“ The annual meeting of the parent association at Liverpool was in every way calculated to encourage our fondest hopes for future anniversaries. Animated with their national characteristic, vigorous enterprise chastised by caution, our Scotch brethren have at length followed a good example and organised a Scotch branch, which promises to afford substantial help in the northern district ; and last of all the Eastern Counties Association, at their meeting held at Ipswich, on April 11th, resolved to unite with the general body.

“ Three branches added within the year, the first provincial general meeting well attended and thoroughly enjoyed, vigorous efforts towards the establishment of a benevolent fund, these are items to cheer us as we review the past year.

“ In our own branch also we have tokens for good. Fourteen new members have been added to our list, an experiment has been made with a view to additional oppor-

tunities of meeting, which justifies repetition, numerous cases in which action has been taken in defence of our first object, and manifold experience as to the certain growth of a 'generous professional spirit among practitioners throughout the district,' these all testify to a truer and purer condition of things in time to come, and should have the effect of attracting within our ranks every reputable practitioner in the district to which we belong.

"According to Bye-law 14 three members of the Council retire (and those three have been selected who have attended the fewest times), but are eligible for re-election.

"The Council nominate Roff King, Esq., of Shrewsbury, as President for the ensuing year, and Joseph Harrison, Esq., of Sheffield, as President-Elect, or Vice-President."

The TREASURER said the receipts for the year amounted to £12 15s. The expenses were very light, being only about £5, but he could not expect the expenses of all their meetings to be so light, for friends at Leeds paid for several matters out of their own pockets. The balance in hand was about £8.

Dr. D. A. WORMALD moved that the report and statement of accounts be received and adopted, which was seconded by Mr. ROFF KING, and carried.

The PRESIDENT then called attention to the fact that the Council had nominated Mr. Roff King as President, and Mr. J. Harman as Vice-President and President-Elect, and said the Council proposed that next year the annual meeting should be held at Sheffield, and it was believed the meeting would be a great success.

The names of retiring members of the Council were Messrs. W. H. Nicol (Leeds), T. Richardson (Derby), and J. N. Manton (Wakefield). He was sure they would all feel very great pleasure in electing their friend Mr. King as President for the year ensuing, and he (the Chairman) was sure that the sending around of the ballot box was a mere matter of form, in accordance with the rules of the Association. He was sure Mr. King would appreciate the honour which had been done him, and that the society generally would be pleased with his election. The other gentleman was Mr. Harrison, of Sheffield, whom they had proposed as their Vice-President and President-Elect, for he would next year be their President.

The President and Vice-President having been duly elected,

The CHAIRMAN said their next business would be the election of a Secretary and Treasurer, and he did not think they could do better than to re-elect Dr. Waite and Mr. S.

Wormald. He begged, therefore, to propose that these gentlemen be re-elected.

This having been carried and unanimously agreed to,

Dr. Walker and Mr. Sims were requested to act as scrutineers in regard to the election of three member of the Council.

Mr. CRAPPER (Hanley) proposed a vote of thanks to the retiring President and Vice-President, and the rest of the officers for the past year for their valuable services. All those gentlemen had exerted themselves very actively in the discharge of their important duties, and the members generally were much indebted to them.

Mr. DILCOCK (Liverpool) seconded this, and it was carried unanimously.

Mr. MATHESON inquired whether it was the rule of the Branch that each year the three members of the Council who had attended the least number of times should be the three to retire.

Dr. WAITE replied that there was no written rule to that effect, but they had proceeded upon that plan hitherto because it secured the best workers upon the Council.

The CHAIRMAN then read the rule.

Mr. HARDING said the rule they had acted upon seemed to be that those men who had attended the fewest meetings should retire, but were eligible for re-election; but if a man attended all the meetings he was to remain on the Council until death, or what not, removed him.

The CHAIRMAN replied that that was so.

Mr. HARDING said some of the members thought that was a very objectionable plan, for those men who resided in the large towns, where the meetings were mostly held, would be the men who were best able to attend the meetings, and these were the men who would be retained on the Council, so that they did not get a constant introduction of "new blood." In almost every other Association members of the Council retired by rotation, and it appeared to him to be a very objectionable plan, that simply because a man attended every meeting he was to be a continual member of the Council, and that the members should not have the chance of saying whether he was a man of their choice or not. The proper rule was that a man must go to his constituents after a certain period.

The CHAIRMAN explained that the large towns where the meetings were held could not have a preponderance of members, for when they first decided as to the laws, they were perfectly unanimous that towns like Liverpool should have two members, Manchester two, Leeds two, and so forth, so

as to make the Council as thoroughly representative as it was possible to get it. If they adopted the other system they might have only one member for Liverpool and one for Manchester.

Mr. HARDING repeated that he thought the members ought to have the power of re-electing, or not, every member of the Council in his proper turn, and that a man should not be always in the Council even if he did attend all the meetings.

The CHAIRMAN said Mr. Harding could if he wished give notice of his wish to have rule 14 altered at the next Annual Meeting, and then they could discuss the subject.

Mr. DYKES said he did not think the rule required altering at all, but he suggested that the Council might consider the matter at their next meeting.

The CHAIRMAN explained that it was competent for that meeting to elect anyone they pleased, and added that the result of the election (which was then handed in) would, he thought, meet the difficulty at once, for they had got "new blood" in the Council as Mr. Harding wanted, for the meeting had elected three entirely new members, namely, Messrs. E. H. Williams, L. Matheson, and H. Blandy.

The CHAIRMAN then thanked the Secretary and Treasurer for the kind and able assistance they had rendered him during his year of office, and also the gentlemen who had so kindly met him there and at Leeds. He hoped and trusted that Mr. King would feel as much gratification as he did at the end of his year of office, and he also hoped that, as years rolled round, he might have the pleasure and the honour of seeing the British Dental Association again in Liverpool before his term of life came to an end.

The newly-elected President, Mr. ROFF KING, then took the Chair, and said: Gentlemen,—It now becomes my pleasant duty to address a few remarks to you, in which I shall be very brief; but before doing so, allow me to thank you most sincerely for the honour you have done me in electing me to preside over you during the ensuing year. I have accepted the invitation with the greatest diffidence, well knowing that I have not the power adequately to discharge the duties attached to the appointment. This chair has hitherto been occupied by gentlemen of the highest attainments, who have laboured unceasingly for the interests of our calling, and who have made for themselves a reputation which will never fade away. To follow the example thus set my by predecessors will be my earnest and most anxious desire, although I cannot hope to pilot our vessel safely into port at the close of the session without the assistance of those

wise counsellors who have so ably commanded us in the past ; and who, I have the fullest assurance, will be ever ready to help in the future. I must also ask your kind indulgence during my year of office, as I fear I shall frequently need it. I have to congratulate you on the success which has attended the operations of our Branch during the past year. Our strength is not only maintained, but is increasing, although not so rapidly as we could desire. Probably the restrictions which we have thought it necessary to make as a condition of membership may have excluded some from our ranks ; but I have no doubt that the explanation for the absence of many is to be found in the one word—apathy. This is by no means an attribute to be proud of, and I have yet to learn that anyone indulging in it ever achieved a parliamentary victory, or was assisted by it in solving a scientific problem. Let us, therefore, be content to dispense with the services of the apathetic members of our profession. Let us continue to help those who do their best to help themselves. At least we shall be rewarded by the consciousness of having done that which seemed to us to be right in fighting for, and in getting passed, an Act of Parliament which has ensured the best results for our successors, while it has done no injury to existing rights.

I trust that the slight deviation from the beaten track which we propose to make to-day, will not be distasteful to our brethren who are very zealous for work, and hope that it will in no way detract from the scientific character of our meeting. In London and other large centres our professional brethren have opportunities for social intercourse which we can very seldom command. We wish, therefore, to make the most of the occasion offered to-day to renew and cement old friendships and to create new ones, for it is only by the free interchange of ideas that we can understand and appreciate each other.

I have to acknowledge the very many kind letters sent to me by members who are unable, from various causes, to be with us to-day, almost all of whom give an assurance of their deep sympathy with our work. I must especially deplore the absence of our late president, Mr. Campion, to whom we owe so much. I am sure we all wish him a safe and speedy return to his duties and to us. In conclusion, gentlemen, let me offer to you a very hearty welcome to Shrewsbury. Our ancient borough is well worth a visit, but unfortunately time will not admit of our displaying to-day the many archæological treasures we possess. I thank you for your attendance, and sincerely hope that this day's proceedings will not be without profit and pleasure to us all.

Mr. R. E. STEWART proposed a vote of thanks to the President for his address; this was seconded by Mr. R. ROGERS and carried.

The PRESIDENT then announced that they were prepared to receive casual communications, remarking that these communications were very valuable, and should be encouraged as much as possible, for without them they would require expensive diagrams and so forth, to make them plain to one another at a distance. He should, therefore, be glad if, during his year of office, gentlemen would oblige him by bringing forward any peculiar case or cases they might have, for there was always something to be learned from them.

Mr. HARDING produced a model of a contrivance for preventing the water of the wheel lathe splashing.

Mr. APPLEBY KING, of Worcester, exhibited a curious specimen of lateral and central teeth united, extracted from a clergyman's son in February last. Also models of two partially edentulous jaws; their singularity consisting in the fact that the children from which they were taken, aged fourteen and eleven, were the offspring of parents with a similar deformity, the mother of these children and her mother having obtained a good age without erupting either temporary or permanent incisors in the lower jaw. One peculiarity pointed out in these models was the extreme thinness in those portions of the jaw below the alveolar line, there being no sign of impaction. Mr. King has promised to send duplicates of these models to the Odontological Society's Museum.

Mr. CRAPPER exhibited several peculiar and interesting models of regulation cases, both before and after treatment, and explained the means adopted to produce such satisfactory results.

Casual communications were also presented by Mr. Ridge (Stafford) and Mr. Jewett (Liverpool).

Dr. WALKER, in regard to Mr. King's communication, said they had cases of the sort of two generations, but not of three as in the present case. Such cases as these they were very desirous of having recorded, and he hoped Mr. King would supply a written description, so that it would be accurate.

Mr. KING said he would do so.

Mr. W. E. HARDING then read a paper on "Treatment of the Pulp," which will appear in a subsequent issue.

Mr. HENRY BLANDY, L.D.S. Ed., then read the paper on "*Dentists versus Surgeons practising Dentistry.*"*

* See page 513.

The PRESIDENT remarked that the paper they had just heard was certainly somewhat caustic, though, perhaps, not more so than the nature of the subject required. The Association of Surgeons was, he was glad to say, very insignificant in point of numbers, and apparently not very dangerous as regards influence. He thought that if these gentlemen were let alone they would soon fall into the background and become obsolete. He should be glad to hear any remarks which members might have to offer.

Dr. WALKER said that, whilst he thanked Mr. Blandy for his able paper, he could not quite agree with him in his conclusions. Whilst most were looking forward to a brighter future in the fully qualified Dental Surgeon, Mr. Blandy had apparently looked at the subject from behind—qualified surgeons taking up Dental practice without special technical Dental education. Dental students, after their apprenticeship, supplementing the Dental curriculum by a few extra lectures and qualifying as surgeons, were simply adding to their knowledge in general surgery and making themselves more efficient by this better knowledge of a wide subject. What was to be hoped for in the future was—Dental pupils able and willing to take their examination in Arts immediately after leaving school or college; then a three years' apprenticeship in the laboratory of a Dental practitioner. When this was accomplished, they might commence at a general and Dental hospital the necessary curriculum for full membership of one of the Colleges of Surgeons, the Dental licentiate examination also proving their qualification to the title of thoroughly educated Dental Surgeons. It was most important that the parents of Dental students should allow them sufficient funds to enable them to take out "perpetual" tickets; these would entitle the owners to continue their hospital practice, attendance at clinics, or on any course of special lectures they might desire.

Mr. STEWART said he considered they were very much indebted to Mr. Blandy for his able paper; it was one which he should like to see circulated all over the country, together with the remarks of Dr. Walker, which he fully endorsed.

After a few remarks from Mr. SIMS and Mr. R. ROGERS.

Mr. BLANDY said he was extremely obliged to them for the very kind manner in which they had received his paper. The paper did not attack the M.R.C.S. and the L.D.S. working side by side in the future. Those whom he attacked were the men who said "Be surgeons first and Dentists afterwards," and he hoped in what he had said he had not been unduly severe, for he should be extremely sorry to

unnecessarily hurt any man's feelings. He was extremely grateful to them all for the kind reception they had given this, his first paper.

Mr. HARDING also expressed his thanks for the kind manner in which his paper had been received.

Dr. WAITE said there was only one matter more. They all felt very much obliged to the President, not only for his address, but for the able way in which he had presided over them throughout that meeting, and he therefore begged to propose that the best thanks of the meeting be tendered to Mr. Roff King for presiding.

The proposition was seconded and carried unanimously.

The PRESIDENT thanked the meeting for the vote, and said he should be very pleased at all times to do anything in his power to promote the interests of the Association. He must add that he was deeply grateful to Mr. Harding for what he had done, and the valuable assistance he had rendered him in regard to the arrangements for that meeting; his assistance had been most freely and ungrudgingly given.

The meeting then terminated.

At the invitation of the President and Mr. Harding, the members then proceeded to the new boat-house of the Pengwern Boat Club, where a picnic luncheon was provided by the gentlemen named. At the termination of the repast, the healths of the President and of Mr. Harding were proposed, and these gentlemen were very cordially thanked for the kind and hospitable manner in which they had received the members of the Association. The health of Dr. Walker, president of the Odontological Society, was then given, and a vote of thanks was also passed to the committee of the club for their kindness in allowing the visitors the free use of the room and the boats, in which a number of the members afterwards enjoyed a trip on the river.

[The report of the proceedings at the Dinner will appear at our next issue.]

Dental News.

VERRIER'S CONTINUOUS GUM FACINGS.

WE have been requested to state that Mr. Verrier will give his demonstration on this most interesting work at

Messrs. C. Ash and Sons' establishment on June 4th at 4 o'clock, and we can only again recommend those who may not already have seen the process to avail themselves of this opportunity.

ASHENHURST FUND.

	£	s.	d.
Mr. Verrier (Weymouth)	0	10	6

A few pounds more are earnestly requested for this case of necessity.

Further subscriptions will be received by Messrs. C. Ash and Sons, the Dental Manufacturing Company, Mr. Rutterford, Messrs. W. and J. Jamieson, and the Editor of this Journal.

DEMONSTRATION ON CONTINUOUS GUM FACINGS.

It is with pleasure we notice that very considerable interest is being taken in Mr. Verrier's process of this pret work, and his simple but efficient gas furnace.

We are informed that at his recent demonstration at the Dental Manufacturing Co.'s offices considerably over a hundred gentlemen were present, many of whom had travelled very long distances, and that the two hours' demonstration was most interesting and satisfactory, Mr. Verrier having been enabled to fire four cases within that short time, and great was the appreciation expressed by those who witnessed it.

[BRITISH DENTAL ASSOCIATION.

THE Annual General Meeting of the above Association will be held in Plymouth on the 24th and 25th of August, C. Spence Bate, Esq., F.R.S., President, in the Chair.

APPOINTMENT.

Mr. Wm. DONSTON, L.D.S., Ireland, has been appointed Dental Surgeon to the Training Hospital, Tottenham.

QUERY?—Inasmuch as there are now so many amalgams in the Dental market, will some member of the profession kindly mention which amalgam filling he considers *best* and least liable to shrinkage?—L.D.S. Eng.

Correspondence.

[We do not hold ourselves responsible for the opinions expressed by our Correspondents.]

To the Editor of the 'British Journal of Dental Science.'

SIR,—In your issue of the 1st inst. is an article on Dr. Holmes' method of duplicating vulcanite plates, I cannot agree with him in the practical part of it, although the theory seems feasible enough. In the first place, to boil plaster of Paris long enough to soften the vulcanite sufficiently to take it away from the gums and teeth, would render it so soft that it would not be fit to work upon afterwards. Also the damage done to the mould in this condition would, even were the case successfully packed, give a double amount of work in finishing. I have remade several pieces in vulcanite. I embed it in plaster in the same manner as described by Dr. Holmes. When sufficiently hard I open the flask and make the arrangement hot in an oven or over a Bunsen burner. This will harden the plaster and at the same time soften the vulcanite, so that it may be removed bodily with the teeth and without fear of damaging the mould. Then place the plate in hot oil and it will become soft, almost as new rubber. The teeth are then easily removed and, after cleansing thoroughly from oil, &c., as easily replaced in their sockets in the plaster mould. It may then be proceeded with as in a new case.

I am, &c.,

MECHANIC.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 82, Mortimer Street, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
 - . It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
4. All communications relative to subscriptions and advertisements are to be addressed to the Publisher, Mr. J. P. Segg, 82, Mortimer Street, Regent Street, London, W.
5. The Journal will be supplied direct from the office on PREPAYMENT of subscriptions as under:

Twelve Months (post free) 14s. 0d.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skliros, 82, Mortimer Street, Regent Street, W. A single number sent on receipt of seven (penny) stamps.

ANSWERS TO CORRESPONDENTS.

- G. J. SHREWSBURY.—Please collect the cases and forward the notes for publication.

Communications have been received from Messrs. W. F. Cornelius (London), J. Jamieson (Glasgow), Ash & Sons (London), H. D. Justi (Philadelphia), W. G. Rutterford (London), G. Jones (Shrewsbury), B. W. Freeman (Waterford), Wm. Doaston (Tottenham), George Bennison (Southsea), Dr. David Power (London).

BOOKS AND PAPERS RECEIVED.

- ‘Lancet.’ ‘British Medical Journal.’ ‘Medical Times and Gazette.’ ‘Chemist and Druggist.’ ‘New England Journal of Dentistry.’ ‘Cosmos.’ ‘Missouri Dental Journal.’ ‘Ohio State Journal.’ ‘Pharmaceutical Journal.’ ‘The Dental News.’ ‘Cape Town Evening Press.’ ‘L’Odontologia.’ ‘Deutsche Monatsschrift. für Zahnheilkunde.’

NOTICE.—We desire that it may be clearly understood that our pages are open to all for free expression of their views on matters connected with our profession. We only ask for terseness of expression and MODERATION IN TONE.

When otherwise unobjectionable, difference of political or other opinion will never be regarded by the Editor as a disqualification for the admission of any communication to the pages of the **BRITISH JOURNAL OF DENTAL SCIENCE.**

British Journal of Dental Science.

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VOL. XXVI.

CYSTIC TUMOURS OF THE JAWS, AND THE ETIOLOGY, GENERAL CHARACTERS, AND RELATIONS OF TUMOURS.

By F. S. EVE, F.R.C.S.

ERASMUS WILSON LECTURER AND PATHOLOGICAL CURATOR OF THE MUSEUM OF THE COLLEGE, AND SURGICAL REGISTRAR TO ST. BARTHOLOMEW'S HOSPITAL.

(Continued from p. 513.)

LECTURE III (*continued*).*

WE will now pass on to consider the relation which the different varieties of tumours bear to each other, and to the malformations by excess. As an example of the malformations by excess, let us take the supernumerary digits occurring on the hands and feet. They are distinctly hereditary; usually there is only one, placed either on the outer or inner side of each hand or foot, for they are almost invariably symmetrical. The additional digit may be represented merely by a tubercle containing a small mass of bone, or all the bones may be represented; it is, however, never absolutely perfect in structure. The nature of the supernumerary digits in man and some of the domestic animals has been discussed by Professor Gegenbaur ('Journal of Anatomy and Physiology,' 1882). His paper has been recently translated by Drs. Garson and Gibon. By a train of reasoning, founded upon anatomical details, he shows that the formation of a supernumerary digit in man is the result of a reduplication of one of the terminal rays at the extremity of a limb. It cannot be referred to a reversion, for no multi-digitate animal now exists, except the fishes, from which such a tendency might be traced. A supernumerary digit in man must therefore be considered a reduplication, the result

* Given at the Royal College of Surgeons, June, 1882. The latter part of the Lecture, treating of the relations of tumours to each other, has been extended, but the conclusions have not been altered.

of a tendency to variation. In some instances this reduplication is apparent, as in a specimen (No. 311) in the museum of the Royal College of Surgeons, in which it does not extend further back than the first phalanx; but in the majority of cases the additional member may rather be considered a partial or imperfect reduplication resembling an outgrowth, by budding from the base of another perfectly developed digit.

The most remarkable point with regard to the supernumerary digits is a tendency which they occasionally exhibit to grow again after removal, even when this is performed at the joint by which they were connected with the hand. In one case, quoted by Mr. Darwin, this occurred twice. In this power of regrowth, they exhibit a resemblance to the recurring sarcomata, and manifest in this respect, as Darwin says, an embryonic condition. He regards their recurrence as a process of budding similar to that observed in the reproduction of the limbs of some amphibia after removal.

Some further insight into the nature of the tendency to abnormal growth giving rise to true tumours may be gained, perhaps, by reference to the congenital hypertrophies of extremities, leading to the production of the so-called giant limbs. A specimen (No. 4061a) was presented recently to the College museum by Mr. Macnamara, consisting of the left foot of a young woman greatly enlarged and deformed by a prodigious overgrowth of the skin and subcutaneous tissue of the sole; the whole limb below the knee was much longer than the opposite extremity, and the half of the brain, face, and tongue on the same side of the body were also distinctly enlarged. The left foot had been continuously increasing, out of proportion to the growth of the rest of the body, since birth. A similar growth had commenced on the sole of the right foot four months before the patient's death. A remarkable latency of the tendency to growth had therefore existed in this foot, which has been also observed in other cases, and may be compared to the latency of some tumours of congenital origin, as the dermoid cysts. These hypertrophied limbs show the imperfect nature of the tissue composing them, not only in their continuous growth, but also in a tendency to a form of ulceration somewhat resembling epithelioma, which I have observed in two cases. It does not appear probable that in the hypertrophied foot just referred to there was primarily an excess of formative material, but rather that, owing to some faulty organisation of the tissues, its growth was not correlated with that of the body generally.

Similarly, in the case of a supernumerary digit, the

formative elements of the limb need not necessarily be in excess of the normal standard, until, by a bifurcation or by a budding-out of the cells of a rudimentary digit, the rudiment of an additional member is formed.

An analogous process occurring at the earliest period of embryonic life, at the anterior or posterior extremity of the blastoderm, would lead to one of the forms of double-headed monster in the one case, or to reduplication of the lower extremities in the other. And, if we refer a similar budding-out of redundant formative tissue to a much later period of embryonic life, when the various structures have acquired their natural form, the abnormal growth will involve a few of the individual cell-elements of the structures, and as a result we shall have the various tumours appearing in early life (or in the process of development of the affected organ), as the multiple exostoses and enchondromata, and the adenomata.

Further still, if we trace the manifestation of the same tendency to a much later period of life, we may, perhaps, thus form an idea of the origin of the sarcomata and cancers.

An imperfectly formed supernumerary digit (as shown, in specimen No. 310a Royal College of Surgeons' Museum) consisting only of a small nodule of bone surrounded by skin and attached to the ulnar side of the metacarpal bone, cannot by any definition be separated from true tumours, as the exostoses, which are distinctly hereditary.

Closely analogous to such imperfect supernumerary digits are the accessory and detached granules and adenomata met with near or in the mammary and thyroid glands. Lücke* mentions a case in which a tumour grew in a superadded lobe of the thyroid gland. It was of the size of a fist, and occupied the submaxillary region. The patient, a man aged twenty-one, stated that the tumour was noticed soon after birth, but that it had grown quickly only in later years. It was obviously "a lobule of the thyroid affected with colloid degeneration," or, in short, an accessory lobule of the thyroid gland having the structure and general characters of an adenoma.

In dissecting a breast recently, I found a firm nodule, about the size of a hazel nut, lying near the axillary border of the gland, but completely detached from it. The nodule consisted microscopically of fibrous tissue containing large tubules or duct-spaces lined with short columnar epithelium; these were, in places, enormously dilated. Smaller ducts branching into small terminal pouches or acini were also

* Op. cit., Band ii, 1 Abth., S. 283.

observed. This nodule deserves almost the name of an accessory glandule, owing to the high type of its structure, which differed from that of the normal gland rather in the confusion of its arrangement than in other respects. It may be regarded, with much probability, as an intermediate step between the ordinary adenomata and the accessory mammary glands occasionally met with in the axilla. For while the high type of its structure connects it closely with the accessory glands, it is shown to be allied as closely with the adenomata, by the existence of a small tumour above and on the inner side of the nipple in each breast. These lay upon, and were partially embedded in the breasts, were separated easily from the gland tissue, and resembled the detached nodule in their microscopic structure. The growths produced no symptoms during life, and were probably stationary. The patient, a woman, aged fifty-nine, died of bronchitis after the removal of an epulis of the lower jaw. Lücke states that he has frequently observed circumscribed adenomata of the breast near the axilla.

Analogous tumours are met with in other organs, as the glandular polypi of the rectum in children; these may be regarded also as superadded portions of mucous membrane, composed chiefly of gland-tissue.

Surely these supernumerary glandules and adenomata may, in all respects, be compared to the supernumerary digits; like them presenting different degrees of perfection in their development, and like them also produced by a process of reduplication or a budding-out of some portion of the part from which they spring.

There are, also, some examples of overgrowth in glandular organs of the same nature as the giant limbs to which reference has been made. As, for instance, the immensely hypertrophied breast in the College Museum (No. 4739), weighing thirteen pounds. It had enlarged for only a year and a half before removal from a girl, aged nineteen; the other breast was affected in the same manner. Most worthy of remark in this case is the fact that, a continuously progressive enlargement of both breasts should have occurred about the period when adenomata commonly appear; yet this was a true hypertrophy, for the glandular structures equalled in the perfection of their development the normal breast. The fibrous tissue was much increased.

Now, having indicated a relationship between accessory glands and adenomata, let us further examine the relation between the adenomata and the cancers. There is a much closer resemblance in the general structure and arrangement of these two groups of tumours than is generally recognised.

The glandular tissue of an adenoma of the breast consists of gland-tubes and acini in varying proportions; but we find also in most tumours, solid columns or rods of small epithelial cells, which may be traced through various stages of development to the formation of gland-tubes. They are the representatives in the tumour of the solid ingrowths of the epiblast forming the rudiments of the mammary gland. By means of these solid columns of cells, we can trace the relation between the more highly organised epithelial tissue tumours, or adenomata, and the most elemental forms constituting cancers. It can be made out in most specimens of cancer of the breast, that the epithelial cells are arranged in irregular, tortuous columns; and that the alveoli, filled with cells, which are said to be characteristic of cancer, are not closed spaces, but columns of cells cut transversely or obliquely. This fact is exceedingly clearly shown by some sections of cancer of a male breast which I have.* These columns of cells may be considered analogous to the rudimentary cell columns of adenomata; but in the cancers of the breast, the further development into gland-tubes does not take place as a rule, although, in some instances, it is observed. The epithelial cells are much larger than those of adenoma; many of them are multinucleated, and appearances of division may be seen.

The glandular structure of cancer is most beautifully shown in cancers of the thyroid gland and of the large intestine. The morbid growth in the thyroid consists of gland-tubes lined with one or more layers of regularly arranged columnar or spheroidal epithelial cells.†

(To be continued.)

ON THE DANGERS OF ARTIFICIAL TEETH.

By D'ARCY POWER, M.A., M.B. (Oxon).

THE dangers which beset the wearers of artificial teeth who are careless, has again been brought prominently before the public by a recent inquest, and one more has been added to the long and valuable list of similar cases collected by Mr. Weiss. In the present instance the patient was a

* Diagrams illustrating these points were shown at the lecture.

† See Lücke, Pitha and Billroth's 'Handbuch,' Band iii, Abth. 8, S. 94; and Warrington Haward, 'Trans. Path. Soc.,' vol. xxxiii, p. 291.

clergyman in South Wales. He was admitted to St. Bartholomew's Hospital on May 13th, with the following history:—Whilst in bed on the previous morning he woke with an urgent sense of suffocation, at the same time missing a gold plate, to which were attached the right upper lateral incisor and the first bicuspid teeth. An attempt was made by the local doctor to remove the teeth, but as it was unsuccessful he was advised to start at once for London. He arrived at the hospital at 6.30 a.m., on Monday, May 14th, and on admission was found to be much exhausted. He complained of pain at the episternal notch, which was increased when he attempted to talk. He brought up much frothy mucus, but no blood. He had no dyspnoea so long as he remained quiet, and he was not cyanosed. There was a considerable fulness of the front and sides of the neck due to emphysema. The patient was unable to swallow fluids, the endeavour causing pain. At 1.30 p.m. Mr. Savory, after consultation with his surgical colleagues, decided to remove the foreign body, and the patient was anæsthetised. The impacted plate could not be felt by the finger, the horse-hair probang was therefore passed and was found to touch the plate at a point midway between the larynx and sternum. The probang was passed beyond the obstruction and was then withdrawn, when the plate was dislodged and came within reach of the finger and was removed with the laryngeal forceps. The plate had been provided with a hook at each extremity, one of which had broken off. The symptoms were not materially relieved by the removal of the plate, and the dyspnoea continued unabated, whilst the emphysema gradually extended over the thorax. The patient passed a restless night, and in the course of the following day his temperature rose to 105° F. He died somewhat suddenly on the 16th, twenty-eight hours after the teeth had been swallowed. The post-mortem examination showed that the emphysema extended into the anterior and posterior mediastina. The œsophagus presented a ragged ulcerated perforation on its posterior wall opposite the cricoid cartilage, and a corresponding ulcer was found on the back of the cricoid itself to the left of the middle line just below the arytenoideus muscle. The latter ulcer perforated the mucous membrane and submucous tissue, but did not penetrate the interior of the air-tube. It was evident from the position of the ulcers that the plate had been arrested at the end of the pharynx and had taken up a position nearly in the antero-posterior plane, with one edge resting upon the cricoid cartilage and the other against the wall of the pharynx. The pharynx was perforated and a suppurating track could

be traced from the opening down the left side of the œsophagus to the chest; it extended along the spine nearly to the diaphragm. Both pleural cavities contained pus. The trachea was throughout inflamed but it was not perforated, the emphysema would therefore seem to be due to the escape of air into the surrounding tissue from the aperture in the œsophagus.

The lessons to be derived from this case would seem to be that persons who wear false teeth should assure themselves from time to time of the security of any fastenings which may be necessary to keep them in place; whilst the Dentist should ascertain that these same supports are in perfect order and are not corroded or so bent as to give way under any slight strain. Teeth should, when practicable, be removed at night, and in the majority of cases this can be done with very little trouble; by all means let the patient wear them night and day until he has got used to the sensation of having them in his mouth and until they are perfectly comfortable, but as soon as this is the case let him remove them on going to bed. In such accidents as the one upon which we have been commenting, the chief danger arises from the presence of hooks and other irregular projections from the sides of the plate. In attempting either to push down or withdraw such plates when they become impacted, the surrounding tissues are almost certain to undergo a greater or less amount of laceration, and thus the prognosis becomes very much more grave. In a large number of cases such projections may be almost completely discarded, for after the first few weeks, a well-fitting plate adapts itself so completely to the mouth of the wearer as not to require any such extraneous aid to keep it in position. We would, therefore, suggest that, as far as possible, such aids be dispensed with as an ordinary method of fixation, and that the use of hooks should be restricted to those more rare cases in which they are absolutely necessary.

SOME OF THE DIFFICULTIES AND CASUALTIES OF EXTRACTION.*

By W. F. CORNELIUS, L.D.S. Eng.,

HOUSE SURGEON TO THE DENTAL HOSPITAL OF LONDON.

MR. PRESIDENT AND GENTLEMEN.—Having a desire to read a paper before you of a strictly practical nature, I have,

* Read before the Students' Society of the Dental Hospital of London, May 21st, 1883.

after some consideration, selected this subject, which is one of great import to us as students no less than as practitioners; moreover, I find on reference it is one which we have not had an opportunity of discussing for a considerable time at this Society.

The principles of treatment in the practice of Dental Surgery in regard to the use of the forceps have undergone of late years a gradual change from that of a liberal view to a conservative one; so that the operation of extraction is now only practised as the *dernier ressort*. Although, however, we should aim at conservative treatment, yet we shall be constantly compelled to practise the radical cure, and in doing so lay ourselves open to some of the difficulties and casualties connected therewith.

It is foreign to my intention to-night to enter upon the ordinary and approved methods of extracting the several teeth which are known to most of us, and are so well described in the various text books, therefore I shall confine my remarks more especially to the casualties.

I may, however, just remind you of the cardinal rules, viz.:

1. To remove the whole of the tooth.
2. To remove it quickly, and with as little injury as possible to the surrounding structures.
3. To perform the operation without unnecessary pain.

I hope I shall not be misunderstood when I say quickly, for I know the early tendencies of the student are to fulfil this injunction at the expense of the first one, and so remove the crown only.

Fracture of a tooth, however, is unfortunately not confined to a tyro or novice, it is one of the commonest casualties we have to treat.

I would like, however, to call the attention of our younger members to a Scylla and Charybdis which they will do well to steer clear of. First, that of indulging during extraction to a superlative degree in the lateral movements, which when so exaggerated may be termed "pump handle;" and secondly, that which Mr. Salter acrimoniously calls "the student's trick," viz. grasping the tooth and averting the head.

A fracture of a tooth having occurred, here arises one of our difficulties, which may be increased by the alveolus being unusually dense.

An escharotic should first be applied to the now exposed pulp, and if the tooth possess two or more fangs we shall have to ascertain whether they are disconnected, if not shall probably have to separate them with dividing forceps, and

then remove the fangs singly. But when only the lower third or fourth of the roots of teeth are fractured in the jaw they may be allowed to remain unless clearly the subjects of disease.

Fracture of the alveolus or of the jaw itself may occur whilst attempting to extract teeth rendered difficult by the abnormal position of their fangs, but is not so likely to happen now as formerly when the key was generally used. In fact with the latter instrument fracture might occur when they are normal. As the key has now become a historical instrument I need not point out the dangers connected with its employment.

The following casualty, however, occurred to a former Dental Surgeon at Guy's when operating with forceps. He says: "When I was extracting the two superior central incisors the portion of alveolus corresponding to the inter-maxillary bones broke away and was merely held in place by the soft tissues." He also quotes a case of fracture of the horizontal ramus of the lower jaw by an experienced operator.

The removal of an impacted lower wisdom tooth constitutes an oft recurring difficulty in our extracting-rooms. These teeth will be found in varying degrees of impaction, from that of complete burial beneath the base of the coronoid process to that of crowded implantation between the base of the coronoid process behind and the second molar in front. In the former case, by the time the patient seeks advice, there will probably be concomitant inflammation, abscess, and perhaps trismus, and it will often be found quite impracticable to remove the unerupted wisdom tooth, in which case it will be proper to remove the second molar. If at all practicable, however, an attempt should be made to extract the wisdom tooth, and failing this the second molar.

In the second case, where the tooth is erupted but crowded, notwithstanding there may be trismus present, the wisdom tooth can be removed without great difficulty.

The elevator, which I believe was first described and figured by Bell, is a most useful instrument for the removal of these teeth, and when they are impacted and trismus has set in cannot well be reached with any other.

As this instrument, however, requires great care in its manipulation or serious injury may be inflicted on the surrounding important structures, I shall here take the liberty to digress and mention the necessary precautions when using it, and also some of the casualties which may occur if these precautions are neglected.

In applying the elevator the handle should be firmly

grasped, and the forefinger of the right hand should always rest close down to the extremity of the blade that it may act as a guard, and thus prevent the instrument from slipping.

When operating on the right side the forefinger is generally placed on the back of the blade, and in front of it when operating on the left. But often in the latter case the forefinger is in the way, and to obviate this difficulty I have frequently seen the elevator used with the finger quite two inches from the point of the blade to the great risk of the patient. I find the better plan to adopt is to place the forefinger on the upper edge of the blade instead of in front of it. Should the elevator slip it may pierce the tongue, cheek, or soft palate, and the transverse-facial, or carotid arteries might be wounded, also the gustatory nerve which lies just below and internal to the wisdom tooth, the tooth, in fact, being the surgeon's landmark to the nerve.

As examples of accidents which have occurred when using the elevator, I will quote the following cases from Mr. Salter's 'Surgery.' He says:—"When I was house surgeon at King's College Hospital a poor man came to the out-patient room to have a molar tooth extracted, and a student essayed to do it with an elevator. The instrument slipped and, having traversed the mouth, pierced the cheek on the opposite side, and apparently divided the transverse facial artery."

He also mentions the following case:—"A gentleman came to me to have the fangs of a lower wisdom tooth extracted; he had been operated on by a surgeon, who attempted to extract the tooth with the elevator. The crown had broken off, and the instrument, slipping backwards, completely transfixed the soft palate close to the tonsil."

In using the elevator for lower wisdom teeth care also must be exercised not to introduce and force the blade too great a distance in a vertical direction, or you will run the risk of lacerating the inferior dental nerve or artery, which you are aware lie immediately under the apices of the lower wisdom roots.

Care is also required not to make inordinate use of the second molar as a fulcrum, but the socket of the wisdom tooth itself.

The upper wisdom tooth is the only one of the series where the use of the elevator is unquestionably forbidden. The following accident illustrates this. Mr. Cattlin thus records it:—"The gentleman who operated in this case had the misfortune to break off the crown of the tooth, and in endeavouring to extract the root with the elevator the instrument slipped and broke away the tuberosity of the maxilla, with a part

of the floor of the antrum and a portion of the sphenoid bone."

I have not referred to these several mishaps, gentlemen, in order to discourage the use of the elevator, but merely to advocate all possible care when employing it. I, for one, should like to see the elevator used more frequently than it is in our ordinary extracting room, so that it might be managed more dexterously when the "gas-room" dressership is attained to.

Another catastrophe which may happen when extracting is to force a tooth or stump into the antrum. Should this untoward accident occur an attempt should be made at once to remove it; if this be impracticable without considerably enlarging the orifice, it may be left to see if any irritation is set up before operating further. A stump can often be removed by syringing, but should septa exist the fang may become lodged in one division of the maxillary sinus and remain a source of permanent irritation. An instance of this kind occurred in the practice of Mr. Cattlin, and, as the patient's father had died from malignant disease of the jaw, it was deemed prudent to remove the stump. A trephine was applied to the labial plate of the alveolus, and the cavity laid open when, after considerable difficulty, it was removed by means of a cap of gutta percha mounted on a piece of bent wire.

A similar accident is where a stump slips into an abscess cavity in the bone.

Molar stumps are very liable to be pushed into the antrum when using the elevator, and therefore it should only be used for upper molar stumps in exceptional cases, and then with great caution.

Loss of sensation from injury to the inferior maxillary nerve may take place when extracting teeth of the lower jaw, especially the wisdom teeth. The numbness commonly passes off in a few weeks, but a case in which the injury was permanent is thus recorded:—"The tooth being at length grasped, was with the exercise of much force dislodged. It had barely passed the patient's mouth, when he sprang from the chair and, placing both his hands upon the right side of his mouth and chin, exclaimed in the wildest excitement, 'What have you done? what have you done? You've torn away my lip—my lip is gone!' When he was brought to something like reason he seemed bewildered, for he was able to feel his lip and chin with his fingers though he could not feel his fingers with his lip and chin. By degrees the patient explained what he felt, or rather what he did not feel. All the teeth of the lower jaw on the right

side were dead to sensation, and the whole area of the lip and chin supplied by the mental nerve was absolutely numb."

A guarded prognosis should be given in these cases, and as regards treatment, they must be left to nature.

A difficulty is frequently experienced in diagnosing the offender amongst a group of contiguous carious teeth, but can generally be surmounted by adopting the various plans recently brought before our notice in the paper read here on diagnosis.

Also another point we must not forget is, that sometimes pain felt is referred to a perfectly innocent tooth, perhaps the corresponding tooth in the opposite jaw. A very marked case of this description came under my notice here only a few weeks since, when a patient complained of pain on the left side of the superior maxilla, where some teeth had been recently extracted, but as no cause could be found there, a more extended examination revealed an exposed lower molar on the same side, which was presumed to be the cause and consequently extracted; as I have not seen the patient since I conclude this has proved a cure, and so verified the diagnosis.

When removing teeth for a patient under the influence of an anæsthetic the most serious casualty that can arise in the operation of extraction, viz. the falling of a tooth or portion of it into the air-passages, may easily occur unless great care is exercised.

Therefore, I would especially call the attention of gentlemen present who are just eligible for the "gas list" to the following rules:

1. The operator should not lose sight of the tooth he is extracting until it is withdrawn from the mouth.
2. He should be careful to remove each tooth or detached piece of one from the mouth before proceeding to the next.
3. And, when using the elevator should seize the tooth or stump with the finger and thumb of the left hand the instant it is dislodged from the socket.

The following case, which I will briefly quote, occurred in Ireland, and terminated fatally:—"A molar tooth of an adult man passed through the larynx into the trachea on the instant of its extraction by a Dentist. The man felt a momentary sharp pricking pain at the top of the windpipe, this was instantly followed by a severe fit of coughing which soon passed off, but recurred several times without any evident cause, and at each time with less and less severity, until after a few hours it ceased to produce any further irritation. However, he complained from the moment of the operation that he could not get rid of an undefinable uneasiness in the

chest. A difference of opinion on the part of the gentlemen who saw him in consultation caused a delay in any attempt at operation until the symptoms had gone so far that no good could result from the use of the knife.

"The man died on the eleventh day after the accident. At the post-mortem examination the tooth was discovered lying in the right bronchial tube, about one inch below the bifurcation of the trachea."

When performing the operation of excision, the excised portion of the tooth is very apt to fall back into the mouth, and to be inspired by the patient.

I would here remind you that within the last few months a Dentist in America had to pay damages for the distress caused to a patient through allowing a stump to fall into the larynx when extracting under gas.

Laceration of the gum is also liable to occur when extracting under an anæsthetic, and this most frequently happens in connection with the lower wisdom teeth.

The rule here is that where teeth raised from their alveoli are firmly attached to the gum, the operator should pass on to other teeth, leaving its dissection from the gum until the patient has recovered.

Dislocation of the lower jaw is another mishap which often occurs when a patient is under the influence of an anæsthetic, in consequence of the relaxed condition of the muscles. We should endeavour in these cases to effect the reduction before the patient has recovered consciousness, and this, as a rule, can be readily managed by pressing with the thumbs, protected with a napkin, on the back teeth, at the same time elevating the anterior portion of the jaw with the fingers.

A troublesome and not uncommon complication occurring after extraction, is abnormal hæmorrhage, which we must be prepared to treat promptly. When there is a tooth standing on either side of the one extracted, after plugging a piece of wood may be wedged down between them, and thus a four-tailed bandage dispensed with. Another point to be remembered is that published in the 'British Journal of Dental Science' a short time ago by Mr. Hern, viz. to plug with short pieces of lint, so as to allow of its gradual removal, and thus avoid recurrence.

Lastly, I would suggest as a presentative to many of these casualties, the purchase of a good set of forceps, in which term I do not include those instruments delighting in such a profusion of curves in their handles and redundancy of metal in their blades, sold as "forceps" of American pattern by the depôts, the use of which by our American confrères

I can only explain by the supposition, that the sensory nerves of transatlantic patients are more obtund than the corresponding nerves of the British.

In conclusion, gentlemen, I beg to thank you for your kind attention to what I fear has been rather a dull paper, but as the subject is one on which all of you can speak with more or less experience, and some sympathisingly, no doubt a good discussion will follow, and so my object in reading it will be attained.

SURGEONS *VERSUS* DENTISTS PRACTISING DENTISTRY.

By HENRY BLANDY, L.D.S.Ed., Nottingham.

(*Concluded from page 518.*)

The Dental Reform Committee felt this in 1877, when Mr. Tomes proposed and carried the resolution:—"That those persons only who possess the licentiatehip in Dental Surgery of the Royal College of Surgeons, shall be entitled to use the designations of Dental Surgeon, Surgeon-Dentist, Dental practitioner, and Dentist; and, 2nd, that qualified Dental practitioners alone shall be capable of recovering fees for Dental operations." These resolutions were carried by the Reform Committee on the 7th of April, 1877.

Prior to 29th January, 1877, the Association of Surgeons practising Dentistry sent a memorial to the College of Surgeons in the endeavour to persuade it to ignore the L.D.S. diploma altogether. They first state who and what their association is. 2nd. That the association with much deference to the opinion of the Royal College of Surgeons, ventures to suggest that no schedule should be permitted to be signed by any lecturer on Dental anatomy, physiology, or surgery, who does not hold the membership or fellowship of the R.C.S., or at least some surgical diploma entitling the possessor to registration under the Medical Act. 3rd. That it is undesirable to relax the strictness of the present curriculum for the L.D.S. 4th. That any duly qualified surgeon shall be entitled to sign schedules or certificates for those who require them for the Dental licence. 5th. That the non-possession of the L.D.S. diploma should not interfere with the right of surgeons in practice as Dentists to hold Dental appointments at hospitals. This was not publicly

known until May, when it was published in the 'British Journal of Dental Science.' This memorial is signed, it may be supposed, by the whole strength of the association, which numbered the large number of forty; twenty-three have no L.D.S., four of these at least did not practise Dentistry at all, only seventeen had L.D.S. The Dental Board recommended the college to accept and act upon the second resolution, making it imperative that Dental lecturers should possess registrable surgical degrees, any special qualification being unnecessary. Our Dental Reform Committee was not asleep; as soon as these resolutions were made public, seventeen of the heads of the profession in London sent in a memorial, begging the council to suspend their decision until the licentiates, who would be seriously injured, had been communicated with; of these 259 appended their names to a memorial begging the college to consent to no arrangement which should place those holding the L.D.S. (the curriculum for which it had full power to order and enforce), behind and below those holding any other qualification. As a result of these memorials, the College of Surgeons appointed a committee to consider the questions relating to the Dental diploma, which recommended that the Dental licence should in itself be deemed a sufficient qualification for appointment as lecturer on Dental anatomy, Dental physiology, or Dental Surgery, or the post of surgeon to a special Dental hospital, or the Dental department of a recognised hospital; and the committee were of opinion that certificates should not in future be received from teachers, unless, in addition to any other qualification they possessed, they also held the L.D.S. of the college. Thus the Dental Reform Committee carried their points.

I noticed that Mr. Craigie complained that he should be disqualified from signing a certificate, while his late butler, who had taken his L.D.S., would be able to sign them. Surely Mr. Craigie was as able to study for and take the L.D.S. as his butler.

In a letter to the 'Lancet,' May 8th, 1877 ('British Journal of Dental Science,' June, 1877) Mr. Tomes says "The Association of Qualified Surgeons practising Dentistry urges that the possession of the licentiate-ship shall not of itself qualify a person to teach in a Dental school, or to hold a hospital appointment, but that a registrable surgical qualification shall in itself fully qualify the holder for either office. Now if the special education of which the licentiate-ship is but the authentic testimony, is needless for the *teachers* of Dental Surgery, or for a hospital Dentist, how, in the name of common sense, can it be urged that a special

training is necessary for the practitioner? In other words the association denies, by its rules and resolutions, the necessity of special education, and indirectly asserts that the Dental curriculum and licentiateship are but troublesome superfluities."

After this a great paper war waged, statements and counter-statements were made, surgeons practising Dentistry made strong efforts to obtain support and recognition from the general medical profession, and Dentists practising Dentistry feared prosecution for performing the surgical operation of extracting teeth.

But time wore on and the Dental Reform Committee, which became merged in the British Dental Association, accepted the condition of things as it found them, and has really elevated and improved the ethics and education of the profession.

To the British Dental Association we owe the advantage of our pleasant meetings and discussions, and our organisation, which enables us to present a compact front to our pseudo friends and avowed enemies. There is no doubt but that the Association of Surgeons practising Dentistry would have professionally exterminated not only those Dentists who were without diplomas, but even those holding the L.D.S., had it not been for the successful efforts of the Dental Reform Committee in getting their claims recognised. We can never be too grateful to the gentlemen who formed it for their earnest and painstaking work on our behalf.

Now what has been the method of procedure of the Association of Surgeons practising Dentistry? Has any Dental Surgeon benefitted by its existence? Has it improved our ethics, our education, our modes of practice, our literature? Has it been of any public benefit or utility? Has it not arrogated to itself a position of professional virtue, knowledge, and infallibility, which it does not possess, and to which it is not entitled? Have not its members derided and cast off their Dental qualification? *i.e.*, those that possessed them. Have they not advised the withdrawal of their names from the list of licentiates in Dental Surgery, preferring to appear only in the medical directory? and have they not withdrawn their names from the Dentists' Register? like some dissatisfied and disappointed men who join a monastery and henceforth, leading an ascetic life, withdraw from the world in order to purify it. Their text was elevation, their sermon and practice is depression, condemnation, and desertion. They professedly despise Dentistry, but their pockets are filled with Dental fees.

Listen to an extract from one of their president's addresses,

delivered February 18th, 1880 ('British Journal of Dental Science,' March 1st, 1880). Mr. Cattlin said:—"The other night I had a dream, forgive me if I speak figuratively, when more than five thousand Dentists thronged my bed in different costumes. The large majority were busy with their aprons on, screwing down little iron frames, just as the undertaker does his wooden box; others were cooking in new-fashioned style by gas and steam; others again, were stamping gold and setting teeth upon it, ever and anon puffing and blowing like an engine pipe; a few were dressed as gentlemen with a small mirror or forceps in their hands, the latter with a spot of blood upon it; some were polite and some were not, *but all by law were equal*; some complained about the dirt and noise the others made, their want of scholarship, and altercation followed altercation until a fight arose, and just as happened in the upper heavens, the wiser won and drove the others out of their community.

"Is this a dream? then waking would be pain;
Oh! do not wake me; let me dream again."

The bad taste and absurdity of the passage speaks for itself, and comment is unnecessary.

A little further on in this remarkable address is an unwitting testimony to the compelled necessity of admitting all practising Dentistry to Registration—viz. the reference to the Apothecaries Act of 1815—"At that time the majority (of surgeons) kept open shops and sold pink saucers, smelling bottles, besides drugs and chemicals, and were really more vendors of medicines than medical practitioners." And then it is stated on an authority as unimpeachable as it is historically accurate and scholarly—"According to Shakespeare" (who died about 200 years before) "they were far from being a wealthy class."

But no matter:—Gradually the medical profession rose to its present honorable position.

So, let us hope, will Dentistry rise—but it must rise like the medical profession, by the honorable conduct and skill of its individual members, not by everlastingly and fulsomely dinning into everyone's ears that surgery is its mother and medicine its father—obstetrics, ophthalmics, and aurics, its brothers and sisters,—like some ne'er do weel roué, who boasts of his aristocratic connections. People respect those who respect themselves. It is time all this cant was laid aside.

Now begins the crusade against practical Dentistry, the aspersions on the "mere mechanic," and the advice that mechanical Dentistry be relegated to a distinctly special business.

It has over and over again been laid down that mechanical Dentistry is an essential and worthy branch of our profession. This opinion has, after mature consideration, been incorporated with the curriculum, which demands three years apprenticeship to mechanical Dentistry, as well as attendance on lectures and demonstrations on it and metal-lurgy. Those of us who have been in practice many years will need no proof of the necessity of these requirements. But these gentlemen say, "It's dirty—it's unbecoming—it's not professional. It is trade! Give it up. Be surgeons and practise Dentistry if you like.

Well, let those who preach—practise, let them give it up, and adhere to strictly surgical and medical Dentistry—let them show their sincerity in elevating their profession by carrying out their own tenets.

Well, these surgeons and physicians are to take up Dentistry and inform their medical friends and the public of that fact in the legitimate way. For, says this late President, (ibid, 191) "The public are quick to discover and avail themselves of superior abilities if they be made known to them in the usual way—by published works." That is to say, when your surgeon is hardly on the threshold of the real practice of Dentistry he must blow the trumpet of his own superior Dental ability, and must evolve a work from his inner consciousness that shall attract the world to his surgery.

But, lastly, when our young surgeon has left off the study of surgery and medicine, which he must not continue to *practise* publicly or privately—or his medical friends will be afraid of losing their patients; and when he has been engaged in Dentistry for a few years, if indeed his book have brought him any practice, what is his general surgery and medicine, so long laid on the shelf, worth, compared to that of a surgeon or physician equally well qualified, and in the daily unceasing practice of them? Would they not be slightly dusty and old-fashioned, think you? And for this little consideration he has neglected his proper special education in Dentistry, and hopes to compete with men well trained and qualified. I think those who contend for a surgical education *merely* for the Dentist, lose sight of the fact that fully nine-tenths of our work is purely technical and special.

In conclusion, I should say to a young man desiring to be a Dental Surgeon—go in for the L.D.S., and, as I would urge one entering any profession or trade—learn your own business—be a master of all its details; if you don't disgrace it, it won't disgrace you.

British Journal of Dental Science.

LONDON, JUNE 15, 1883.

THE protracted discussion upon Mr. Sewill's question—"Do the incontrovertible facts which we now possess as to the etiology and pathology, fully account for the phenomena, of dental caries?"—at the Odontological Society, and taking up the greater part of three evenings, is a matter of no slight importance. Without dealing with the conclusions that were arrived at, we may ask whether questions of the importance of the above should occupy the attention of the members of the Society, and the subject adjourned from one meeting to another until it is fully exhausted. Our idea is that it may, and that an immense advantage will be obtained by such a practice.

It will be remembered that, as a rule, a paper is read, and the discussion which follows, is the result of observations made during the progress of the reading, and ideas that may have suggested themselves by the remarks that are made. Upon a certain time being reached, the author of the paper is called upon to reply, and so the subject is passed over. This is admissible in subjects of a general character, but not so with those such as Dental caries, alveolar abscess, and others. The published 'Transactions' of the Society give the opportunity to most of us to understand what has been said and afford an opportunity to build up matter for future meetings.

Mr. Sewill is to be congratulated upon his venture, which we may say was successful. It elicited all that could be said on the subject, and only left one or two points which required satisfactorily clearing up. These were to a degree laid down by Mr. Sewill in his final remarks, and when we have the opportunity of publishing the discussion in full we hope energetic action will be taken by the studious members

of the profession to render the etiology of Dental caries quite clear.

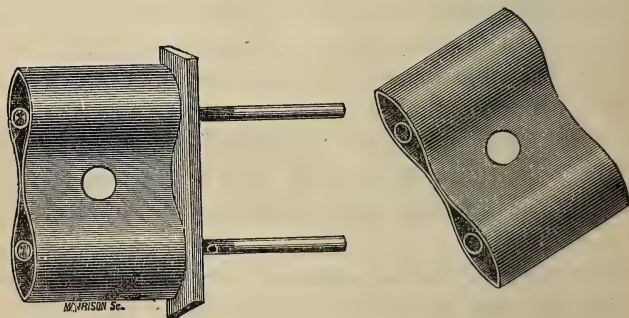
We appealed in the same spirit when Mr. Tomes put his problems to the world as to the influence septic organisms had in the production of alveolar abscess, and we hope that not a few are working to that end.

Manipulative Miscellany.

All instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month, they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits, and without any intention or wish to pit one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

A NEW ARTICULATOR.

A VERY simple form of articulator has been forwarded to us from Mr. John Stirling by Mr. Jamieson, of Glasgow. The accompanying woodcut so plainly shows its construction

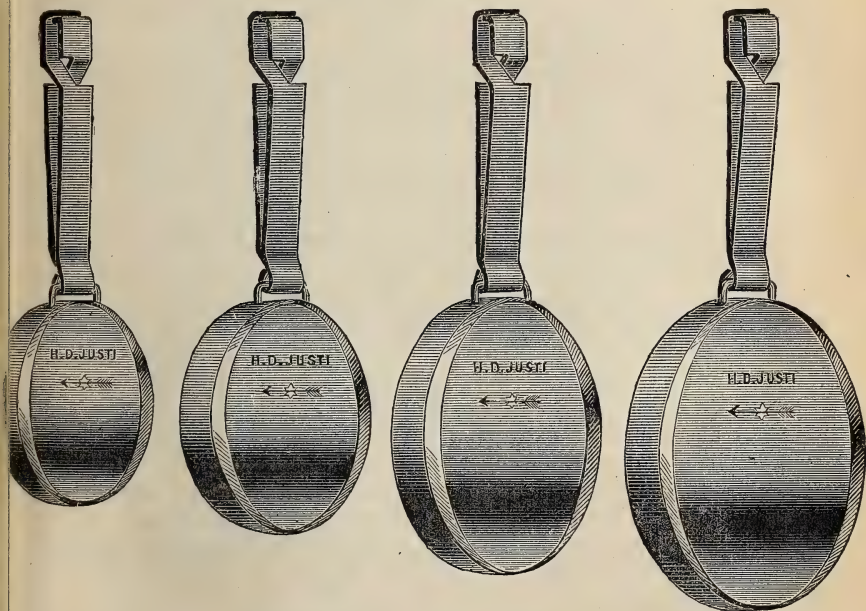


that our description can be brief. As can be seen, the articulator is divided into three parts; the central a brass plate one eighth of an inch thick with two stout steel rods running through it, and two ends which are made of sheet

brass with two tubes to receive the rods of the central piece. When required for use the three pieces are put together and a little plaster of Paris is poured over them, and the models which have previously been joined together to form the proper bite are pressed in. When the plaster is quite set, the models will be found fixed to the ends, and will work up and down upon the rods of the central piece. Its simplicity is such as to command our recommendation.

IMPROVED RUBBER DAM WEIGHTS.

MR. H. D. JUSTI has brought out a set of four rubber



dam weights with improved clasps, and which the above illustrations show. Varying in weight from one to three and a quarter ounces the usefulness to which they lay claim is obvious.

Literary Notices and Selections.

NOTES ON OPERATIVE DENTISTRY.*

THE posthumous work of our lamented friend, Dr. Marshall H. Webb, is before the world ; completed as it was just within a few weeks of his death, we have the latest ideas of that gifted operator.

The book is carefully got up, numbering 175 pages and divided into twenty sections freely interspersed with carefully drawn woodcuts. Passing from a good phototype likeness of the author, we pass to the definition in which operative Dentistry is held to be the "application of remedial agents for the correction of perverted function and the removal of abnormal growths so that the elements of the tissues and organs may be normally reproduced and maintained ; the observance of dentition throughout its course, that the irregularity of the teeth may be averted, modified, or corrected ; and the performance of such operations as shall prevent or arrest the solution of the lime salts, or decay." In the section Histology, the development of the tissues and structures are severally dealt with, but we are soon stranded by the views of Dr. Atkinson on the development of the teeth, the enamel organ being altogether ignored, and a mass of words expended upon the description of what is no more or less than fibrous tissue is unaccountable, after the demonstration of Tomes and others. Passing over what may be termed an exposition on the minute communications of nerve and vital force between one part and another, we come to Dr. Bodecher's recent observation on the minute canaliculi, said to exist in the enamel dentine and cementum of the human teeth. To aid the student in observing these facts a carefully prepared account of how to produce specimens is written.

The description of the tissues commences with the dentine which, so far as the matrix and dentinal sheaths are concerned, are identical with European teaching. The fibril under the stain of chloride of gold is shown not to completely occupy the canal, and of a "beaded structure bifurcating at the periphery of the tooth and sending off thorn-like

* 'Notes on Operative Dentistry.' By Marshall H. Webb, D.D.S., Philadelphia. S. S. White Dental Manufacturing Company.

elongations through the space between the central fibril and the wall of the canal. The thorns are distinctly conical, their bases being attached to the dentinal fibres and their points directly towards the matrix."

This assertion ventures to prove that there is but, the merest atom of the matrix that is without nervous and vascular elements, and is therefore in direct opposition to C. S. Tomes who says, "In the matrix of a perfect tooth no trace of cellular structure can be detected; it is uniform and perfectly transparent." This authority gives in explanation, "That the tissues which are naturally so thin as to present great facilities for examination, nerves of a degree of fineness unknown elsewhere have been demonstrated," and the same may be said of the finer canaliculi. The illustrations which accompany this, leave nothing to the imagination.

To be continued.

PAPAIN THE NEW PULP DIGESTER.

DR. S. W. SPARROCK, Pointe à Pitre, Guadeloupe, in writing to the editor of the 'Ohio State Journal,' about papain the new pulp digester, says:—"Although the inhabitants of the West Indies have always had recourse to the leaves or fruit of the pawpaw to make meat tender, by either wrapping the meat into the leaves for a little time or by boiling a piece of the fruit with the meat, yet it never entered into the idea of any one to employ it in Dentistry. That has been left to Dr. Van Antwerp, for which he will, I believe, be proud, as I think it will be a valuable addition to Dental therapeutics. Directly on seeing your report in the October number of your Journal I determined to give it a trial, which I soon did, on a little girl, whose right inferior six-year molar was badly decayed, with pulp exposed and partially dead. I first fitted a metallic cap, leaving a good space between it and the pulp, and, after drying the cavity, made an application of the fresh juice of the pawpaw, fixed on the cap and filled the cavity with gutta-percha. I allowed it to remain twelve hours, after which I cleansed the cavity, covered with oxide of zinc and glycerine, flowed over that oxychloride, and temporarily filled the remaining cavity. Three weeks after, I found the tooth

without pain, and with every indication of a living pulp. I have since made an extract of the leaves and stems, and have treated four cases similar to the first, with good results. I shall continue its use, and let you know later my success for publication. Your interest in the discovery is my excuse for writing you this."

GELSEMINUM SEMPERVIRENS IN FACIAL NEURALGIA.

DR. SPENCER THOMSON, of Torquay, thus replies to a correspondent in the 'Midland Medical Miscellany':—"My usual dose, unless I have reason to know or believe the patient is very sensitive, is $\mathfrak{m}$ xx, repeating in an hour if there is no relief, and if there is no giddiness or affection of vision, I may give a third dose in four or five hours; but it is rarely required in suitable cases, and I seldom give less than $\mathfrak{m}$ xv. I have found $\mathfrak{m}$ v relieve in a very sensitive subject. I mention 'suitable cases,' for my own experience has told me that gelseminum has little curative effect in any neuralgic affection but that involving the teeth and alveoli of upper and lower jaw. In such it often acts like a charm.

LARGE RANULA, WITH A TUMOUR OF THE FLOOR OF THE MOUTH.

MR. WHEELER read the notes of a case which had come under his care in the City of Dublin Hospital. The patient stated that she had noticed the lump (the ranula) for about a year previous to her admission, but was unaware of anything else wrong with her mouth. On examination a large ranula was discovered, and also a tumour, about the size of a Seville orange, beneath the symphysis menti, which pushed up the whole tongue. He (Mr. Wheeler) excised a portion of the cyst of the ranula, and removed a large piece of bone from it, which, however, did not obtain a permanent cure. Some weeks afterwards (the ranula having refilled),

the girl was in excellent health—the swelling below the chin was not quite as large as it had been when she was admitted—when she was one evening suddenly seized with a violent attack of dyspnœa. When Mr. Wheeler saw her she was sitting up in bed gasping, her eyes starting from her head, and a cold perspiration on her face and body. The tongue was immensely swollen, and pushed upwards and backwards by the enlarged tumours; her pulse was weak and rapid, and suffocation seemed imminent. Incisions were made at each side of the tongue, and the ranula and tumour were opened and their contents evacuated, the epiglottis scored, and warm fomentations and poultices applied to the throat, and the patient made to inhale steam; she was very much relieved by these measures, but next day it was deemed necessary to evacuate, through the floor of the mouth, the remaining contents of the tumour, which proved to be of a cheesy consistence. The case terminated in a complete cure.—*British Medical Journal*.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

At a Meeting of Council, held on 5th April, 1883, the following resolution was passed, viz.:

“That the various licentiates in Dental Surgery of the College, whose advertisements have been or may be brought before the Council by the Inspection Committee, be informed that their advertisements constitute a breach of the undertaking entered into by them with this College; and that, if they be repeated, the Council will be obliged to consider the propriety of cancelling their Dental diplomas.”

ERRATUM.

IN our report of the distribution of Prizes at the Beethoven Rooms on the 23rd ultimo, Mr. Douglas F. Wright was described as Mr. Duncan F. Wright.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

ORDINARY MEETING, HELD MONDAY, JUNE 4TH, 1883.

JOSEPH WALKER, M.D., President, in the Chair.

THE minutes of the previous meeting having been read and confirmed,

Mr. S. J. HUTCHINSON showed a model of the upper jaw of a boy, ten years of age, which had been sent as a donation to the museum by Mr. George Holt, L.D.S.I., of Bury. The boy had four conical incisors and two small molars in the upper jaw, the lower being quite edentulous; the incisors appeared between three and four years of age, the eruption of the molars was not noticed. He was a delicate boy, partly, perhaps, owing to the fact that he could only take soft food. There were several other children in the family and their teeth were normal.

Mr. STOCKEN showed a model of the upper jaw of a boy, five years of age, who had only two abnormal teeth in the front of the upper jaw, the lower being edentulous; the teeth were erupted at about two years of age. The boy was very intelligent and had enjoyed fair health; the only other peculiarity he presented was a dry skin, with marked deficiency of natural perspiration.

In answer to a question from Mr. Coleman, Mr. Stocken said he had made particular inquiries of the boy's mother, and she had assured him that these were the only teeth he had ever had; they had not been preceded by any temporary teeth.

Mr. WALTER COFFIN showed a pressure escape quieter for nitrous oxide cylinders. It was an adaptation of the invention of Mr. Justice, of Philadelphia, for quieting the steam escape of engines, and which was especially used for torpedo launches. He had discovered that the steam escape could be made perfectly noiseless by passing it through a small chamber filled with marbles or glass beads. Mr. Coffin's adaptation consisted of a solid drawn brass tube, about a foot long and an inch in diameter, filled with small glass beads which were retained in place by a diaphragm of copper wire gauze fixed at each end of the tube. It could

be carried in any gas apparatus case and was extremely simple both in appearance and action. Mr. Coffin attached one to a gas cylinder and showed that it entirely obviated the loud hissing noise made by the escaping gas, which was often rather alarming to nervous patients.

The PRESIDENT then opened the adjourned debate on the Theory of Caries with the following remarks:—He thought that all would admit that caries was to some extent an effect of external causes, that it was due to the solvent action of acids generated in the mouth by fermentation, but he could not think that this was the only, or even the chief cause. If so, how would the fact be explained that of two adjacent teeth, exposed to the action of the same acids, caries would be arrested in one, whilst the other would continue to crumble away. The presence of these acids in the oral cavity was not a new condition of things, hence he thought the chief cause of the rapid increase of caries must be looked for in the teeth themselves, and most probably consisted in defective development. He quoted Mr. Charles Tomes's opinion that caries was greatly influenced by heredity, being more common in certain families and in certain races than in others, and also Dr. Hitchcock's statement that after two generations the teeth of American immigrants were no better than those of old established American families. This defective development might be due to deficiency of mineral salts, either from the quality of the water supply or insufficiency of vegetable food, the removal of the husk from cereal food, or to excitement and irritation of the nerve centres during the development of the dental tissues. On the whole, whilst Mr. Sewill deserved thanks for the manner in which he had brought forward certain facts which had been established by the labours of many distinguished observers in this country, on the Continent, and in America, he thought he had scarcely given sufficient prominence to some other facts which in his (the President's) opinion were of equal, if not greater, importance.

Mr. W. J. MILLES said that in the unavoidable absence of Mr. A. Underwood, he had been asked to say a few words on the subject under discussion, and he should confine himself more particularly to the points which Mr. Underwood and himself had been studying together, viz. the action of micro-organisms in the production of dental caries. The observations which they had published nearly two years ago had been very generally confirmed. Dr. Miller, of Berlin, had recently substantiated them in nearly every point, though he drew from them somewhat different conclusions. For instance, he considered that the micro-organisms had

little to do with the active phenomena of caries, but that this was essentially a process of decalcification due to acids produced by fermentation in the mouth. But it was known that fermentation elsewhere was always due to the presence of micro-organisms, and no doubt fermentation in the mouth was due to the same cause. Some support was given to this view of the active participation of micro-organisms in the production of caries by the recent discoveries of the active part they take in the production of other diseases. In some of the diseases of animals the agency of micro-organisms had been scientifically proved, as in the case of anthrax and chicken cholera, and the discovery of the bacillus of tubercle seemed to indicate that a large number of human diseases were also thus caused. Unfortunately they had not yet been able to produce true caries out of the mouth, but this no doubt arose from the impossibility of reproducing artificially all the conditions which were present in the mouth. Very great difficulty had been met with in the artificial cultivation of other special organisms, as, for instance, the bacillus of tubercle; each special organism required certain special conditions of life, and what these conditions were in the case of the micro-organisms of caries had not yet been discovered. There was, however, the fact that changes precisely similar to those which occur in the caries of natural teeth had been found to occur also in the ivory dentures which were formerly used in Dentistry, the conditions here being similar. The fact, therefore, that caries could not be made to go on in teeth which had been removed from the mouth was not opposed to the view that micrococci and bacteria were really the active causes in its production, since this was no doubt due to the fact that we could not maintain out of the mouth exactly the conditions necessary for their active and healthy development.

Mr. CHARLES TOMES said, as he had not been able to make any recent observations of his own on the subject of caries, he should confine his remarks to a very few words. So far as his own slight investigations into the subject went, he was inclined to agree thoroughly with the conclusions of Messrs. Underwood and Milles, but he thought there was a good deal yet to be made out. It was clearly established that micro-organisms do accompany caries, and that they do so in a certain way; it was known also that micro-organisms which were capable of cultivation, breed true, that each kind produces its like, and that they do not run into one another as Dr. Miller supposed. But it was also certain that there were a number of other influences required for the production of caries. Thus, he had himself met with

several patients who, having had exceptionally strong teeth up to full adult life—twenty-five or thirty—had then suffered from a severe attack of typhoid fever, after which caries had appeared and progressed with most extraordinary rapidity all round the necks and in between the teeth in all directions. Now, it was not likely that these mouths had escaped infection with micro-organisms up to that time, but probably the disordered secretions left behind by the typhoid fever had afforded to the micro-organisms the pabulum needed not only for their own growth, but also for the development of those acids which decalcify dentine and perform an important part in the production of caries. A single carious tooth in the mouth must supply micro-organisms enough to destroy every other tooth, and the reason why they did not destroy them could only be that some of the coincident conditions necessary were not present, and probably these were most often found in the state of the oral secretions. He thought that some of Dr. Miller's experiments, *i.e.* when he tried to infect sound dentine by means of carious, pointed to the same conclusions; for he found that although he could produce a temporary multiplication of the micro-organisms under certain conditions, still they appeared incapable of attacking the sound dentine, some of the conditions necessary to enable them to do this being evidently absent.

Dr. ST. GEORGE ELLIOTT remarked that the idea that micro-organisms were the cause of dental caries was a very old one. In all old books toothache was always said to be due to worms gnawing at the nerve, and the same belief is general at the present day throughout the less civilised nations of the world, even in parts as far asunder as China and Japan and South America. He should be glad to say a few words with regard to Dr. Miller and his investigations. He had had the opportunity of seeing a very large number of Dr. Miller's preparations, probably over a thousand of them, and they certainly appeared to bear out the statements which had been made with regard to them. At all events, he (Dr. Elliott) could assure them that Dr. Miller's experiments were honestly made, that he had no hobby to bring forward, his sole idea was to demonstrate the truth, and he certainly deserved credit for his work. For his own part, on a survey of the different theories of caries, it appeared to him that it was impossible to accept any one, the necessities of the case could only be met by combining two or more of the theories which had been put forward. The chemical theory was the most popular at the present day, and it accounted for a good deal, but if chemical action was invariably the cause of decay, how was it that caries did not always

occur at the points most favorable for this action, *i.e.* between the teeth? but caries might occur at any point of the mouth, or at any part of the teeth. Of course it was readily answered that there must also coexist a defect in the tooth at the point thus acted upon, and he thought that the important influence of defective development was now generally recognised by all the chief authorities.

Mr. HENRY MOON said his opinions were only based upon general impressions, but these would lead him to think that overcrowding had a good deal to do with the production of decay. When teeth were closely packed together the attrition they exercised on each other might be sufficient to damage the enamel, and thus let in the active agents of decay. In examining old skulls it would be found that the sides of teeth which have been closely in contact often present polished facets, and if polished facets were produced in these strong old teeth, it was probable that in weak modern ones sufficient derangement of the enamel would be produced to let in the active agents of decay. It was a constant experience that young patients would present themselves, in whom, with the exception of the lower incisors, every tooth would be decayed wherever it touched its neighbour. Besides the weakness of modern teeth, there was probably also some unhealthy condition of the oral fluids which was not previously present. The comparative immunity from decay of the lower front teeth was worthy of consideration. His experience was that the lower front incisors and canines escaped decay wonderfully as compared with other teeth until a lower artificial denture was inserted. These teeth might escape because they received a constant alkaline wash from the saliva poured out by the sublingual glands. He fully concurred with the remarks made at a recent meeting of the Society with reference to the desirability of great attention being paid to the diet of children in infancy and the diet of pregnant mothers. He thought also that it was the duty of the medical profession to give such advice as would prevent as far as possible the influence of heredity in aggravating this and other constitutional tendencies.

Mr. S. J. HUTCHINSON thought that some of the speakers had rather wandered from the question before them. They were not asked to give their own theories of the production of caries. They were simply asked, "Do the incontrovertible facts which we now possess as to its etiology and pathology fully account for the phenomena of dental caries?" He asserted that the "incontrovertible facts" upon which Mr. Sewill appeared to rely were not all of them incontrovertible,

and on the whole he was inclined to support the view taken by Mr. Coleman at the February meeting rather than that taken by Mr. Sewill. His own opinion was that dental caries was not entirely due to external causes, but that there was a vital element in the process. Mr. Sewill had compared the dentine with another non-vascular tissue—the cornea of the eye. He admitted that inflammation might occur in the cornea, but would not allow that it could occur in dentine; “the one,” he said, “was soft and permeable, the other dense and hard.” Now, it appeared to him (Mr. Hutchinson) that the structure of dentine made it exceedingly probable that some action was constantly going on through its soft organic fibres, just as a certain circulatory process went on through the intercellular spaces of the cornea. It would be in the experience of all that the substance of the six-year-old molars became harder as the child grew up to adult life, and this must be due to some vital process. Again, it was well known that when a tooth was attacked by caries a secondary deposit of dentine would often take place opposite the spot of commencing decay. Must not this be due to some influence circulating through the fibres of the dentine by which the action which was going on at the surface of the dentine was communicated to the periphery of the pulp. In conclusion, Mr. Hutchinson quoted from Dr. Norman Kingsley’s paper, read at the International Congress, the following, which he said fully expressed his views:—“The teeth require as much constant nutrition as the muscles, the bones, or any other organs or tissues of the body. The teeth decay, primarily, because the nutrition of their organic structures being withdrawn retrograde metamorphosis ensues. . . . Caries is simply solution or disorganisation of tooth constituents by agents which are always external, but which would be quite inert under other constitutional conditions. The vitality of well-organised tooth structure in a healthy body was quite sufficient to counteract the effects of any active external agents which might be temporarily present. But when nutrition was insufficient or diverted, the resisting power of its vitality inadequate, and destructive agents present, the teeth will yield at their weakest points and caries will result.”

Mr. CHARTERS WHITE said he entertained a strong view that dental caries was mainly due to chemical action. It would generally be found that caries manifested itself in places where a lodgment could be formed, for instance in the interstices of the teeth, and in pits and fissures on the grinding surfaces, not on polished surfaces or on the front of an upper central. So in the case of patients who wore

an artificial denture, and who were not very cleanly in their habits, you would find the pattern of the plate marked out on the teeth all round with superficial caries and decalcification. But if they kept the inside of their plates perfectly clean and polished no disease would occur, showing that it was entirely due to chemical action. Still he did not think that vital influences could be altogether excluded. Vital action might not have much to do with the production of caries, but its existence could be recognised in its attempts to arrest the progress of decay. Thus, when caries was approaching the pulp cavity it was common to find a nodule of dentine inside the cavity, which served as a shield to keep it out. For this and other reasons he thought the existence of vital action in the dentine could not be denied, but he thought there were several points in connection with this subject which required to be more fully worked out.

Mr. COLEMAN said that as he had taken up so much time at the last meeting he would only beg permission to make a few brief remarks that evening to call attention to a point which he had omitted to mention on the previous occasion. Was it not a fact that in cases of caries, especially of the rapid or acute form, the exposed dentine became extremely sensitive? It was possible to drill into healthy dentine, as in some of the methods of pivoting now practised, without causing much pain, but in these cases the dentine became acutely sensitive. He thought that this afforded some evidence of a pathological change. He thought all would admit that external agencies were the primary cause of dental caries, but these acids, fermentative processes, &c., were continually acting; the teeth were constantly exposed to them more or less. Even with regard to the fissures which had been spoken of, they were sometimes the starting point of caries, but sometimes they might exist throughout life and no decay take place. Therefore he thought that where decay did take place there must be a failure, a want of something which in general arrested and counteracted the action of those principles which were constantly present and ever ready to act upon the teeth.

The discussion was continued by Mr. Stocken, who thought that the phenomena of caries could be accounted for by chemical action favoured in the majority of cases by structural defects in the teeth, and by Dr. Field, who thought that they were due partly to chemical causes and partly to the action of micro-organisms.

Mr. SEWILL was then called upon to reply. He said the opinion he had tried to express clearly in his opening speech was that caries was caused by external agents, that the

dental tissues were perfectly passive under these agents, and that there was no pathological action; and to this opinion he was still prepared to adhere. The discussion that evening had gone off into details, as to the exact changes which take place in the tissues, which were not of great importance, and as to which more would hereafter be made out. The point of importance was to disprove the statements made that evening that the teeth act and react from constitutional causes. He maintained that our knowledge of the structure of dentine and enamel, and our knowledge of anatomy and physiology, justified us in stating that it was impossible that these tissues could be the seat of anything which could be compared to the pathological action which might occur in any other tissue of the body. Mr. Coleman had adopted the view of Dr. Abbott, who imagined that he could see in carious dentine the phenomena presented by inflammation in other non-vascular structures, and who depicted corpuscles and other inflammatory products in the dentine. Would Mr. Coleman explain how inflammatory corpuscles could get into the substance of dentine, a calcified matrix permeated by tubes, not more than $\frac{1}{4500}$ th of an inch in diameter, and which were occupied by fibrillæ? It might perhaps be alleged that they were produced in the tissue out of the elements of the dentine; he should like to hear that explained also. The facts mentioned by Mr. Coleman with regard to cementum did not help the question; cementum was bone, and it was not astonishing that inflammation might occur in it under favorable circumstances. With regard to the irritation of the pulp being a sign of vital action, he thought that it was a simpler explanation to suppose that it was due to the fact that the partial destruction of the dentine caused the pulp to be more exposed to sudden changes of temperature, and it was no doubt also partly due to the presence of the bacteria, which were known to penetrate along the tubules. It was, he thought, an "incontrovertible fact" that caries identical with that which occurred in living teeth might occur in dead teeth and in hippopotamus ivory; this one fact appeared to him sufficient to establish his case. Mr. Sewill then proceeded to answer at some length the objections to his view which had been brought forward by the various speakers, insisting that it was quite unnecessary to imagine this mysterious vital influence, that all the phenomena of caries could be readily explained by reference to physical causes, and that this view was more in accordance with what was known respecting the structure and mode of development of enamel and dentine, to say nothing of the support which it received from the

eminent authorities whose opinions he had quoted in his opening address.

After a few words from the PRESIDENT, wishing the members a pleasant vacation, the Society adjourned till November.

MEETING OF THE REPRESENTATIVE BOARD OF THE BRITISH DENTAL ASSOCIATION.

THE Representative Board met on Saturday, the 5th inst. In the absence of the President through continued indisposition, and of the Vice-President owing to severe domestic bereavement, Mr. White, of Norwich, on the motion of Mr. E. Saunders, occupied the chair. Beyond the consideration of the Medical Acts Amendment Bill now in Parliament, and the arrangements for the approaching general meeting, the business was of a routine character. The Chairman read the address of the President, reviewing the present position of the Association ; he also announced, amidst general satisfaction, the affiliation of the Eastern Counties Dental Association, now the Eastern Counties Branch of the British Dental Association. A vote of condolence was passed to the Vice-President, T. Underwood, Esq., and the Board adjourned.

Mr. TOMES' Address was as follows :

With great reluctance I must again ask you to excuse my absence, and allow me to state in writing the words I should have felt it my duty to address to you, had my presence at the meeting been possible.

We all know of, and feel deeply interested in, the Medical Bill now in Parliament, the Dental sections of which are of the utmost importance to our branch of the medical profession. But we have no cause for anxiety. The Government have regarded the Dentists Act with favour, and in the section above referred to, have provided the machinery for bringing Section 28 of our Act into operation so soon as the conjoint Medical Boards contemplated in the Bill are brought into action. Section 28 provides for the Act falling into conformity with any Medical Act for the regulation of education and registration which might be subsequently passed. By this section we are bound, and so long as its provisions are not disturbed to our prejudice we have no ground for action. It may be thought that the passage of a Medical Bill through Parliament affords an opportunity for amending the Dentists Act, and no doubt such is the case ; but in

a limited degree only, and confined to the removal of obstructive conditions inadvertently worded, or imposed so as to paralyse an important provision of the Act. To this extent the opportunity has been used in amending Section 4, wherein the imposed consent of the Medical Council well-nigh renders the preceding section inoperative. It was not foreseen that the ends of justice would be impeded by an antecedent appeal to the Medical Council, which, meeting only once a year, leaves the offender free for, perhaps, eleven months; neither was it seen that the appeal might be so costly to the Dental Fund as to hinder thoughtful persons from making application. If the Bill passes with the Dental section as it now stands, the obstructive conditions, protective to offenders only, will have been removed. It may be thought that more might be done, but it is difficult to see in what direction.

Dissatisfaction is felt at the manner in which registration has been conducted, owing to the different interpretations of a certain phrase, but this is not a matter for new legislation, until the case has been submitted to a high Court of the Judicature, and the disputed phrase has been authoritatively pronounced obscure. Counsels' opinions of the highest authority have been taken, but opinions are always open to the allegation that they have been taken in a particular interest. It has been alleged that we obtained an opinion in the interests of exclusion from the Register; but with far greater justice it may be contended that the Medical Council, already holding a very high legal opinion favorable to our views, sought an opinion in the interest of excusing any attempt at the correction of the Register. It is greatly to be regretted that the Council did not take the usual course and secure by a friendly suit a judicial settlement of the disputed question, the cost of which would probably have been twice covered by the money spent in futile legal enquiries and proceedings. The formal correction of the Register is becoming with the lapse of time less and less important, for public opinion is rapidly widening the difference of status between those young persons who have crept upon the Register without educational qualifications within their reach, and those who have possessed themselves of the licentiateship in Dental Surgery. I say young men, because it is with them that educational measures deal. It is in their true interests, and in the interests of the public, that all such measures are passed; for the fully-established practitioner has his position assured in the minds of his patients and friends, and is thereby placed beyond legislative interference. I need not go further to show that we have no

grounds for appealing to the legislature in respect to a correction of the Register.

The question of direct representation on the Medical Council was brought fully before the Royal Commission on Medical Acts, and resulted in a statement in the report to the effect that the Commissioners could not recommend direct representation. We could hardly expect that they would, for it was understood from the first that there would be a numerical reduction in the Council, and our claim was mainly based upon alleged errors in the initial registration—errors that cannot recur. It must be born in mind by ourselves, and certainly others will not forget the fact, that we are only just consolidated as a recognised branch of the medical profession, and as such lately legislated for; that in the first registration, of necessity, men of very varied degrees of professional education are brought together, the majority of whom can scarcely, in a strict sense, be said to have had a professional education. For these reasons we may fairly be told that the time has not yet come for the establishment of a strong claim for special representation. But our claim, such as it really is, has been heard and recorded, and the Government may, if it sees fit, appoint among its nominees a person who is practically acquainted with the educational and social needs of Dental practitioners, and with this favorable position I am strongly of opinion we should for the present rest content. The superstructure of professional responsibilities raised by the Dentists Act is quite as heavy as our present foundations will carry. When the majority of those on the Register can by their duly attested professional acquirements, not only claim, but maintain, a professional position, it will be time enough to again move for a change in the constitution of the Medical Council in favour of special representation of a special branch of the medical profession. Time and labour alone can work the beneficial change.

The attainment of our educational maturity may be delayed, but certainly cannot be hastened, by the continuance of examinations for the Dental licentiatehip made easy and attractive by reason of their low requirements. It is reasonable and right that after a great legislative change in respect to professional education and qualification, that qualifications should, within a limited period, be given on relatively easy terms to fully established practitioners whose known professional conduct and education is and has been such as will reflect credit on any qualification they may hold. But it cannot be contended that exceptional, or so-called practical, examinations should be extended indefinitely

to younger men who, but that they have managed to get their names on the Register, would to their great advantage have been required to fulfil the terms of the Dental curriculum, and have been submitted to the test of a proper examination. Whatever advantage the individual may thus exceptionally gain, the profession loses by a lowering, in professional and public estimation, of the standard of a qualification which should, wherever granted, indicate equality of knowledge. This objectionable practice directly contravenes the efforts that for years have been, and are still being made to establish uniformity in medical, and lately in Dental, qualifications. We punish for the use of light weights, short measures, and incorrect descriptions; what can be said in favour of the issue or acceptance of a qualification for which the full measure of knowledge and skill has not been asked or given. Can such proceedings tend to elevate our profession in public estimation or give a reliable guarantee that the licentiateship surely indicates a fully and completely educated Dental practitioner.

No valid objection can be raised against the admission to examination *sine curriculo* of persons whose names are already on the Register, provided that all applicants for examination with or without curriculum are treated alike, and that an equal examination standard throughout the United Kingdom. Failing this uniformity of requirements, our advance towards the position of a learned profession, judged by the educational merits of its members, will be retarded, and by the issue of discredited diplomas, the admission of our claims for consideration as such will be indefinitely postponed.

My intimate acquaintance with all that has occurred in educational matters, or, as some put it, in Dental politics, during the last five-and-twenty years, gives strength to the feeling that my period of usefulness as your President will not have wholly passed, so long as medical legislation is impending. Hence it is, that having felt strongly, I have spoken strongly upon the question of our own relations to the present legislative proceedings. All other matters which may come before the meeting I must leave in the hands of the younger and more competent members of the Board.

DINNER OF THE MIDLAND BRANCH OF THE BRITISH DENTAL ASSOCIATION.

At 6 p.m. about forty members, with Messrs. J. R. Humphreys, F.R.C.S., R. W. Withers, W. Eddowes, and W. B.

Rigby, surgeons practising at Shrewsbury, sat down to dinner at the Raven Hotel; the President, Mr. ROFF KING, in the chair.

The usual loyal toasts having been given by the President and duly responded to,

Mr. J. R. HUMPHREYS said he had been called upon to propose a toast, which, happily, would require very little introduction from him, for it was a toast with which they were all well acquainted—"The British Dental Association." He must say that he was very much pleased at having received an invitation to meet them there that day, and it was a very great pleasure to him to do so, being himself a member, and a very old member, of the British Medical Association, which had grown from a small society, to a very large, a very important, and a very influential association. He was very glad indeed to see that the sister profession, that of Dental surgery, was following the example of the medical profession, and that they had, much to their credit, organised an association in the same manner that the medical profession had done, and he was, further, very glad to see that already it had produced such satisfactory results. He believed such associations were most valuable; some of his best friends and most valued friendships he had made in the British Medical Association. It was a great gratification to him always to attend the meetings of that association, which he did most regularly, and he found, as they would find, that the more they saw of each other, and more they respected and loved each other. He was glad they had so large and influential a Branch of the Association in the Midland Counties. It was a very great pleasure to him to meet them there that day, and no doubt his Shrewsbury friends near him would all say the same.

Dr. WAITE, the Hon. Secretary, whose name was coupled with the toast, expressed his regret at the absence of the President of the British Dental Association, who had been expected to reply, and who had fully intended to be there, but other arrangements, over which Mr. Campion had practically no control, prevented him attending. They all felt his absence very much indeed. Personally, he (Dr. Waite) felt it very much, for if the President had been there he would not have been called upon to respond to that toast.

There were one or two facts in connection with the British Dental Association which were calculated to furnish matter for encouragement. Although it was but four years old, having been established in 1879, it already numbered over 500 members, and included a very large proportion of the

most able and the best educated Dental surgeons in the country. The Midland Branch was the eldest child; it was born in 1880. That time twelve months they were meeting together at Leeds, and they were then still the only child, and perhaps a little bit in danger of being spoiled upon that account. Three months later, however, another child was born in the Western Counties, and strange to say, within six months a third was born in Scotland, and only a fortnight ago a fourth was born in the Eastern Counties; so that the Association was in a position almost to claim the Queen's bounty, for although it had not had three children at a birth it had certainly had three within nine months. That showed beyond all doubt that the Association met a want which required to be met—that the constitution of the Association commended itself to members of the profession throughout the country. Modelled upon the lines of the British Medical Association, established upon a representative basis, furnishing means of interchange of opinion, they had every confidence that it possessed the energy of growth and the vitality of endurance. Its portals were wide enough to admit all shades of opinion, they were narrow enough to exclude all the parasites of the profession. The time he believed would come when everyone who practised Dentistry would recognise the advantage of having his name enrolled among the members of the Association.

There were other facts to which he should like to allude connected with their Dentists Act. They were facts of which some persons seemed to be grossly ignorant. There had been repeatedly, and more particularly during the last two or three weeks, assertions made in the pages of the 'Lancet,' which to his mind were simply misstatements of the fact concerning their Dentists Act. For example, there was the assertion that the Dentists Act conferred the right upon inferior practitioners to call themselves surgeon dentists. That statement was simply devoid of all truth. The Act conferred no right to assume any title whatever; it was framed expressly to prohibit inferior practitioners from assuming any title in connection with Dentistry. Previous to the passing of that Act any Tom, Dick, or Harry could call himself "a surgeon-dentist," and there was no power to prevent him. The Act had done this, it had compelled every man engaged in the practice of Dentistry to register his name and address at the office of the Medical Council before August 1st, 1879; after that date (with certain minor reservations) no man could legally assume the title of Dental Surgeon, or any similar phrase, unless he had passed the examination and obtained a licence from one of the examining bodies of Great Britain

or Ireland. That was a fact which should be published abroad. It was a fact of public interest, for it supplied the public with a guarantee that in future every one who enters upon the practice of Dentistry shall have had some qualification for his work. There was one more matter he wished to refer to, and that was the Dental curriculum. There were some persons who took delight in depreciating the curriculum, and attempted to pooh pooh the Dental diploma. It should be known that the Dental curriculum was, with the exception of midwifery and *materia medica*, almost the same as that for the M.R.C.S., with the notable addition of mechanical Dentistry, a full course of practice at a Dental hospital, and lectures on Dental anatomy and physiology, Dental histology and Dental surgery. The whole study required covered a much longer space of time, involved more work, and in many instances a greater investment of money than was required by the ordinary medical practitioner in taking his M.R.C.S., and he should much like to have some of the men who depreciate its value, forced to go through the curriculum and pass the examination, for he thought it would take some of the nonsense out of them. All this at present, however, required to be understood, but he believed the time was not far distant when the Dental licentiate would take a rank second to none in the professional spheres, and might that day very soon dawn.

Mr. W. E. HARDING said the toast he had to propose was one which in all civilised communities, should be, and always was, received with acclamation. Some people thought that if the whole of the medical profession were at the bottom of the Atlantic, the death-rate would not be very greatly increased, but there could be no doubt whatever that human suffering would be tremendously intensified. There were no doubt many diseases in which the death-rate was very large, and in which medical men could only treat the patient according to the symptoms and await the result, but still no one doubted that but for the learning and skill of medical men human suffering would be very greatly intensified. Closely associated as they were with the medical profession, yet their own speciality was defined by certain well-marked lines from the province of the general practitioner, and they in no way impinged upon the toes of the members of the medical profession. People living in the large centres of population, Liverpool and Manchester, to say nothing of London, had an idea sometimes that medical practice in the provinces was still somewhat "in the dark ages," but he could assure them they were very much mistaken, and as an instance he might say that the whole of the work at the infirmary in that town

was carried on in a very advanced manner. Mr. Harding concluded by coupling with the toast the name of Mr. Withers.

Mr. R. W. O. WITHERS assured them that he felt very deeply the honour which they had done him by calling upon him to return thanks for the medical profession, and he was sure that his medical brethren present would appreciate with him the kind hospitality with which they had been received. So far as he was personally concerned, he assured them that that was the most pleasant Dental operation he ever sat under, and he did not care how often it was repeated. He congratulated them upon the success which had attended their meeting, and thanked them for the honour they had done the medical profession.

Mr. W. EDDOWES proposed "The Odontological and other kindred Societies." The Odontological Society was one of the oldest professional societies in the country and was one of the best. The society, he believed, was not in any way a rival of the British Dental Association; he believed it was really the pioneer of the association, that to it they owed their present position and the fact that they had a British Dental Association, and also that they had a British Dental diploma, of which they were justly proud. He was very pleased, indeed, to hear gentlemen speaking in the way they had done of the qualifications required for the profession at present. Some few years ago an attempt was made to force upon them, at the infirmary of that town, an unqualified Dentist, but he himself stood up and most strenuously opposed it. He pointed out that for a properly qualified Dental Surgeon a very stringent curriculum was required, and they had the pleasure and the benefit of having appointed to the office a highly qualified Dental Surgeon in Mr. Harding, a man with whom they were all proud to be associated. He wished most heartily the society every success, and, in conclusion, thanked them for the way in which he and the other medical gentlemen present had been received that evening.

Dr. WALKER, in response to the toast, said he was obliged to them for the compliment they had paid to the Odontological Society of Great Britain and kindred societies. As Mr. Eddowes had said in his speech, it was one of the oldest, in fact the oldest, Dental association in Great Britain. From its commencement to the present its numbers and usefulness had increased, and he hoped the British Dental Association would meet with like success. The British Dental Association would probably outstrip in numbers and usefulness the Odontological Society, as it had already four branches, each

branch anticipating as many members as the Odontological Society at present possessed. The Odontological Society would still press forward and aspire to advance scientific work as it had hitherto done. The truth of Dr. Waite's remarks upon the curriculum of the licentiate in Dental Surgery and the clauses of the Dentists Act, was confirmed by the fact that the Government had grafted the Dental Act, as it stood in the new Medical Bill now before Parliament. He begged to thank the President and members of the Midland Branch for their kind entertainment and the cordial feeling exhibited towards him during his visit to Shrewsbury.

Major STEWART proposed "The Medical Charities of Shropshire." He remarked that the infirmary in that town was founded as far back as 1745, the Eye, Ear, and Throat Hospital in 1818, and the Dispensary in 1843. There could be no question that these charities were doing an immense amount of good, but still it was a question whether they were not doing some mischief as well. In regard to the Liverpool Dental Hospital he knew that they had cases coming there to be treated that ought not to come there, and this was a hardship to energetic, striving young men who were endeavouring to level themselves up to the higher ranks of the Dental profession, but who might be ready to take reduced fees. He was convinced it was a thing that would have to be looked into, in regard to the various charitable institutions. He was quite sure of one fact that the medical profession was beginning to appreciate, and value more and more, the science of Dental Surgery, and to see the importance of their co-operating in reducing pain and suffering. He was glad that at their Infirmary they had appointed a Dental Surgeon, and this was, he thought, most important, for the town of Shrewsbury was not large enough for a Dental hospital. He concluded by coupling with the toast the names of Messrs. Humphreys, Eddowes, Withers, Rigby, and Harding, whose healths were heartily drunk.

Mr. J. R. HUMPHREYS said he was only connected with one of the medical charities of the town, the Infirmary, but with that he had been connected for many years, and he believed it was doing a good work, and was relieving an immense amount of pain and suffering. The good of such an institution did could only be fully understood and appreciated by those who have been in the habit of attending hospitals and seeing it for themselves. While the medical charities of the country were doing an immense amount of good, he feared, also, that they were doing an immense amount of mischief. In Shrewsbury, as elsewhere, they found that there were many cases

constantly occurring of people coming to be relieved by a charity who had no right whatever to come there. He thanked them for the toast.

Mr. HARDING also replied. He believed the local Dispensary and the Eye and Ear Hospital were doing a good work, and so was the Infirmary in a more extended manner. So far as his own department in the Infirmary was concerned, his patients were numerous, and he was sorry to say that in a great measure they exemplified the remarks Mr. Humphreys had made, that a great many of them could afford to pay, and should, as Major Stewart had said, go to men who were willing to take small fees, and who would do the best they could for them. He felt great difficulty in selecting the proper persons to be treated, and no doubt other gentlemen had felt it also. If people who could afford to pay were thoroughly weeded out, he had no doubt whatever that most hospitals would, at the end of the year, be able to show a good balance sheet.

Mr. R. F. H. KING proposed the "Town and Trade of Shrewsbury," coupling with it the name of Mr. Rigby, who replied.

Dr. WORMALD proposed the health of their President, Mr. Roff King. He remarked that their visit to Shrewsbury had been a treat to them all, and especially to those who had visited the town for the first time. They were all much indebted to the local Dental practitioners, who had so liberally catered for them that day, for all they had done, and which he was sure would impress that day's meeting long upon their memories. They were also much pleased with the presence of the medical gentlemen of the town that evening.

The PRESIDENT, in response, said if they had enjoyed themselves that day he was highly pleased, for he had been fully repaid by the enjoyment of their society. He should have been still better pleased had there been a larger number present. But if there were some absent whom they had expected to see, there were those present whom they could scarcely have hoped to see, for they had gentlemen from all parts of the country. Allusion had been made to the social position of the L.D.S. That depended very much on the L.D.S. In Shrewsbury he did not wish to see it advanced, or they might perhaps get beyond their proper sphere. Professionally, however, he was happy to say that their services were fully appreciated, especially by their medical *confrères*. He need not tell them that his heart was thoroughly in the work, and that work was to watch the working out of the Dental Act, to elevate the position of the Dental Surgeon and to secure the strongest bonds of

cordiality between the medical profession and themselves, and which fortunately existed in Shrewsbury.

The toasts of the Ladies and the Press followed.

STUDENTS' SOCIETY OF THE DENTAL HOSPITAL OF LONDON.

ORDINARY MEETING, MAY 21st, 1883.

W. C. STORER BENNETT, Esq., F.R.C.S., L.D.S., President,
in the Chair.

THE minutes of the previous meeting were read and confirmed.

The following gentlemen were proposed for membership Messrs. Smith, Pedley, Brown and Hellier.

Casual communications were brought forward by Mr. PEDLEY who mentioned a successful method of treatment for fracture of the maxillæ.

Mr. HOOPER showed models of a case in which the superior maxilla had been fractured between the two canine teeth; and also the apparatus used to secure its reunion and cure; also a model of a partially edentulous upper maxilla.

Mr. BUTCHER presented a model for Mr. Smale of a canine tooth erupted into the nostril.

The PRESIDENT made some remarks upon the foregoing cases and showed some abnormal teeth.

Mr. HERN mentioned a novel method of treatment for supernumerary central incisors.

Mr. A. J. JONES produced a model of geminated teeth.

The PRESIDENT then called on Mr. Cornelius for his paper on "Some of the difficulties and casualties of extraction," which was followed by a prolonged discussion in which the following gentlemen took part: The President, and Messrs. Robbins, Hern, Hooper, Gabriel, Butcher, Pethebridge, and Baldwin.

During the discussion Mr. MOON showed an excellent specimen of an odontome of the root, and also a model of the injury caused by a gun-shot wound of the maxilla.

Mr. CORNELIUS then replied.

A vote of thanks was proposed by the President to Mr. Cornelius for his paper. Carried unanimously.

The meeting was then dismissed with an announcement,

that, contrary to the usual custom, another one would be held in June.

Dental News.

NEW JERSEY STATE DENTAL SOCIETY.

WE have received a letter from the secretary of the above society, calling our attention to the Annual General Meeting which will be held on the 18th of July and three following days. "Ashbury Park and Ocean Grove," he says, "are one continuous place, and one of the greatest watering places on the Atlantic coast. In the season it contains over 10,000 transit visitors; it extends on the shore for five miles, with broad walks within ten feet of the surf, ten feet wide, brilliantly illuminated at night, and presenting all the attractions of a continental Boulevard. The hotel accommodation is equal to eight shillings per day in English money. There will be a large exhibition of Dental appliances from all the principal depôts of the United States, besides a good collection from Germany." The fact that New York and Philadelphia are in close proximity—two hours ride—makes this meeting a special attraction to British practitioners, and to run over to America must be the ambition of most of our young practitioners.

CONTINUOUS GUM FACINGS.

THE interest displayed in Mr. Verrier's process and gas furnace for this beautiful work seems in nowise abating. His demonstration at Messrs. C. Ash and Son's establishment on the 4th inst. was witnessed by some eighty gentlemen who had travelled from all parts of the country. The general feeling was that of surprise at the facility with which Mr. Verrier packed, soldered, fired, or gum-enamelled in all five pieces of continuous gum facing work in less than two hours with almost total absence of heat and without dirt, a feat that may be appreciated.

Notwithstanding the admirable arrangements made by

Messrs. C. Ash and Sons for the convenience of those present, their very number prevented the watching the minutiae of the work, that the much interested desired. Mr. Verrier therefore, we understand, contemplates giving a series of demonstrations commencing at a very early date, which may be obtained from Messrs. C. Ash and Sons or Mr. Verrier on application.

KUEHN'S TONGUE-HOLDER.

WE have been requested to state that Messrs. Ash and Sons have been appointed agents for the sale of the above, a full description of which appeared in our last issue.

APPOINTMENT.

MR. FRANK A. HUEL, L.D.S. I., has been appointed Honorary Dental Surgeon to the Northern Counties Hospital for Incurables.

Correspondence.

[We do not hold ourselves responsible for the opinions expressed by our Correspondents.]

DENTIST OR DOCTOR?

To the Editor of the 'British Journal of Dental Science.'

SIR,—In what I conceive to be the best and truest interest of the future of Dental science, notwithstanding the contrary view advanced by Mr. Henry Blandy, and accepted by his hearers at the lately-held annual meeting of the Midland Branch of the British Dental Association at Shrewsbury, permit me to say that, if my experience stands for anything at all, I would most strongly advise all young men intending to obtain a Dental license to make this very secondary to the first securing of a full surgical and medical

qualification; the enjoyment of a diploma in which enables any man to practise Dentistry either with or without the minor title of L.D.S. That the framers of the Dental Act considerably overshot their mark in insisting upon as extended and all but (if not quite) as expensive a curriculum for the Dental license as for a full surgical qualification will, I think, be admitted when it is considered that only four years of study is required for complete qualification, no less than eighteen months from this time being allowed to such as study under men holding certain appointments, whilst as to fees, &c., the aggregate cost of study when perpetual tickets are taken out being little, if any, more in the one case than in the other, and the cost of living, &c., being just the same for medical as for Dental students when away from home. And now, in direct application of this proposition, let me state my own experience. Some three years ago I was induced to devote special attention to surgical diseases of the mouth, with such unexpected success that almost at once I found it necessary to employ two legally-registered mechanical assistants, patients from all around my neighbourhood flocking to me directly they got to know that I, as a surgeon (in full practice as such), could undertake the remaking of their badly-fitting cases, or could provide them with pieces likely to be worn comfortably, until at this present moment I have such an arrear of work before me that I have continually to disappoint many patients, who, however, seem disposed to wait my convenience, and yet I get full prices for all I do, and, as a rule, charge more than patients would be asked to pay by lots of those who hold the L.D.S. qualification residing in my immediate neighbourhood. Now, I do not say this boastfully (as proof of which I have no intention of appending my name to this communication), but the fact is that patients come to me because I am a qualified surgeon; I suppose because they believe that I either do or ought to know more of their actual requirements than can possibly be known to any man who has had less opportunities of study. They may be right or they may be wrong; on this point (whilst having one) I offer no opinion, but I do most earnestly and affectionately advise all students to attach themselves only to such hospitals as have connected with them a Dental chair, and whilst going in for full qualification (this is very easy) make the obtaining of the L.D.S. an entirely subsidiary object and intention. Twenty years ago, when I was a student, the obtaining of the L.M. or special license in midwifery was considered a very desirable object, but I should be indeed surprised were I told that any man

having this license ever did any more practice in consequence, whilst for the respective value of certain qualifications, which formerly were deemed essential, the passing of the contemplated Medical Amendment Bill will effectually doom them to extinction. My decided opinion being that the M.R.C.S. or L.R.C.S. qualification will always command more confidence than the minor license, which only covers the bare practice of this single branch of surgical requirement; indeed, I do not hesitate to go so far as to say that hundreds of medical men now engaged in general practice, did they know the certain profits they could surely make by adding Dentistry to their other duties would each one easily be able to fully occupy the time of a good mechanical assistant, and in this way, to the loss of the present race of Dentists, entirely divert (so far as their own patients is concerned) the work and profits which at present is entirely lost to them. It may be said that I am prejudiced in favour of my class; I am, but only insofar as this, in my earnest desire to see the coming race of Dentists qualified, not only to act as mere mechanics, but also to treat, medically and surgically, all those facial ailments from which patients suffer, and for the relief of which they now consult the medical man. Let me suppose a case:—A surgeon (practising Dentistry) is called upon to treat some case of chronic indigestion, does he exceed his duty and obligations if he tells his patient that all treatment apart from the introduction of artificial teeth will be all but useless, or is it at all likely that that patient will either treat this as idle advice or go elsewhere to have these adjuncts supplied? At least, no one would say the surgeon exceeded his duty who, knowing that his patient required a truss, bandage, &c., instructed him to come down to his surgery for their proper fitting and supply. That the future of Dentistry is a bright one I doubt not, but this will not be until the practice of this special branch of surgery is conducted by men who regard it only as a minor branch of that general knowledge enjoyed by the men who seek to excel, and who will not rest contented with that partial qualification which, however able they may be, entitles them only to practice Dentistry. Meanwhile, if the Society of Surgeons which devotes itself to Dentistry (and to which I do not belong) would do its duty it would be by promulgating amongst both Dental and medical students such information as would induce each branch to extend the range of their knowledge, and in this way, whilst raising the standard of one without lowering that of the other, make the practice of Dentistry one not to be sneered at by the public, who,

whether Dentists are willing to acknowledge it or not, know how to discriminate betwixt the surgeon proper and the man who, either with or without his L.D.S., assumes this title. That the commingling of Dental and medical students in such centres as London, Birmingham, Liverpool, and let us hope before long in Manchester, will settle this question I doubt not. Students soon learn to discriminate as betwixt the respective value of diplomas. Whilst all the talk in the world cannot make a minor into a major qualification, or convince the public that either a converted policeman, mechanic, or factory operative, although he has *sine curriculo* obtained the L.D.S. qualification, is quite as good as the man who has given the best years of his life to study, or has obtained a qualification which enables him to secure registration under the Medical Act.

I am, &c., M.R.C.S. Eng.

MONTHLY REPORT OF CASES TREATED AT THE
DENTAL HOSPITAL OF LONDON,
FROM MAY 1ST TO MAY 31ST, 1883.

Extractions	{ Children under 14	451
	{ Adults	865
	{ Under Nitrous Oxide	448
Gold Stoppings.....		171
White Foil ditto		17
Plastic ditto.....		655
Irregularities of the Teeth treated mechanically.....		132
Miscellaneous Cases.....		191
Advice Cases.....		123
Total.....		3053

W. F. CORNELIUS,
House Surgeon.

MONTHLY REPORT OF CASES TREATED AT THE
NATIONAL DENTAL HOSPITAL,
FROM MAY 1ST TO MAY 31ST, 1883.

Number of Patients attended		1439
Extractions	{ Children under 14.....	440
	{ Adults.....	799
	{ Under Nitrous Oxide	190
Gold Stoppings		80
Other Stoppings		265
Advice and Sealing		154
Irregularities of the Teeth		105
Miscellaneous.....		160
Total		2193

CHAS. W. GLASSINGTON,
House Surgeon.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 82, Mortimer Street, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
3. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
4. All communications relative to subscriptions and advertisements are to be addressed to the Publisher, Mr. J. P. Segg, 82, Mortimer Street, Regent Street, London, W.
5. The Journal will be supplied direct from the office on PREPAYMENT of subscriptions as under:

Twelve Months (post free) 14s. 0d.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skliros, 82, Mortimer Street, Regent Street, W. A single number sent on receipt of seven (penny) stamps.

ANSWERS TO CORRESPONDENTS.

“M.R.C.S.”—The bottom of your boiler is doubtless dirty. When vessels are heated on coals, and afterwards over gas, the stench is unendurable. Do not turn your gas too high as you will not get perfect combustion.

Communications have been received from Messrs. Power (St. Bartholomew's Hospital), F. D. Walker (Doncaster), Wm. Hern (London), W. F. Cornelius (London), R. C. Goddard (Stockport), “M.R.C.S.,” Chas. W. Glas-sington (London), “Cranbrook,” “Practice.”

BOOKS AND PAPERS RECEIVED.

‘American Journal of Dental Science.’ ‘Operative Dentistry,’ M. H. Webb. ‘Revue Odontologique.’ ‘El Progreso Dental.’ ‘The Wakefield Express.’ ‘Glasgow Medical Journal.’ ‘Dental Practitioner.’ ‘L'Art Dentaire.’ ‘Pharmaceutical Journal.’ ‘Lancet.’ ‘Medical Times and Gazette.’ ‘The British Medical Journal.’ ‘Le Progres Dentaire.’ ‘The Dental Record.’ ‘L'Odontologia.’ ‘The Cape Argus.’ ‘La Gazette des Hopitaux.’ ‘L'Odontologie.’

NOTICE.—We desire that it may be clearly understood that our pages are open to all for free expression of their views on matters connected with our profession. We only ask for terseness of expression and MODERATION IN TONE.

When otherwise unobjectionable, difference of political or other opinion will never be regarded by the Editor as a disqualification for the admission of any communication to the pages of the **BRITISH JOURNAL OF DENTAL SCIENCE.**

British Journal of Dental Science.

No. 371.

LONDON, JULY 2, 1883.

VOL. XXVI.

CYSTIC TUMOURS OF THE JAWS, AND THE ETIOLOGY, GENERAL CHARACTERS, AND RELATIONS OF TUMOURS.

By F. S. EVE, F.R.C.S.,

ERASMUS WILSON LECTURER AND PATHOLOGICAL CURATOR OF THE MUSEUM
OF THE COLLEGE, AND SURGICAL REGISTRAR TO
ST. BARTHOLOMEW'S HOSPITAL.

(Concluded from p. 545.)

LECTURE III.

BETWEEN the chief types or species of tumours, there are intermediate forms which connect these great groups. Thus, the epithelial elements in some cancers of the breast, much more nearly resemble adenoma than in others. I have sections of a firm mammary tumour, removed from a woman aged 37, which had been growing eighteen months. The sections show under the microscope, largely dilated ducts filled with large multinucleated epithelial cells, in places undergoing granular degeneration. From the walls of the ducts solid buds of similar cells project into the surrounding fibrous tissue; and these solid outgrowths of epithelium may be traced through every stage to the formation of duct-like tubules, lined with several layers of large irregularly shaped epithelial cells. This tumour, perhaps, nearly occupies anatomically a position intermediate between adenoma and cancer of the breast.

Mr. Harrison Cripps* has described and figured tumours of the rectum, which appeared to lie between the innocent and malignant groups—tumours which resembled the adenomata in the slowness of their growth, in the regularity of the arrangement of the epithelial tubes, and in the perfection of the epithelial lining, but which recurred after removal. Tumours of other organs, as the uterus and palate, might also be referred to in illustration of this point. Again, the rare co-existence of adenoma and cancer in the same breast may

* Trans. Path. Soc., vol. xxxii., p. 87, plate vii., fig. 2.

indicate a genetic connection between the two forms of tumour.

In many respects the adeno, or sero-cystic-sarcomata, may be said to form a connecting link between adenoma and cancer, both in the age at which they occur, and in their clinical characters and structure. Notwithstanding the diversity in their naked eye characters, they consist essentially of gland-tissue embedded in various forms of sarcoma tissue. The gland-tissue presents the most diverse characters, from tubules lined with most regularly arranged columnar epithelial cells* to simple columns of round cells.† The more highly organised of these tumours are connected with the fibro-adenomata by those more rapidly growing, softer, and smoother adenomata, the basis of which is composed of ill-developed connective tissue, containing abundance of spindle-shaped nuclei, or even crowded with round nuclei. A specimen, No. 4779A in the Royal College of Surgeons' Museum, serves as an example. It was removed from a woman aged 36, and had been noticed for two years. Again, the more lowly organised forms of adeno-sarcoma are allied to the cancers by rare tumours, of which the following may be taken as an example. A tumour of the breast was brought me for examination; it had been removed from a middle-aged woman, living two years after operation, and was of a firm, indistinctly fibrous texture. It consisted, microscopically, of distinct spindle cells, coalescing to form fibrous-tissue, which enclosed columns and masses of small round epithelial cells. The columns, in a few places, possessed a lumen or central space. From the unusual combination of its structures, this tumour may be considered intermediate in type between the adeno-sarcomata and scirrhus cancers.

But in no instance is the direct continuity from glandular tissue to cancer exemplified with greater clearness than in the proliferous growth of sero-cystic disease of the breast; every possible transition is observed in these growths between rudimentary gland-tissue and cancer.‡

In the first of these lectures, an endeavour was made to show the same relation between the highly organised and elemental multilocular cystic tumours of the jaws.

Certain benign glandular tumours of the skin show in general structure a close resemblance to epithelioma;§ and the ordinary pavement cell epithelioma, even, may be regarded

* As No. 4799a, Royal College of Surgeons' Museum.

† As No. 4783a, Royal College of Surgeons' Museum.

‡ See Nos. 3147 to 3151 St. Bartholomew's Hospital Museum.

§ See "Transactions Pathological Society," vol. xxxiii., p. 335.

as of glandular type in so far that it is an imitation of earliest stage in the development of the cutaneous and mucous glands.

But if the existence of transitional forms can be proved between the innocent and malignant types of the epithelial-tissue tumours, these are as patent as any anatomical fact can be in the connective tissue series, whether of the hard or soft parts. Fibrous tumours occur in every variety, from the dense compact nodules, composed of parallel bundles of well-formed fibrous tissue, to the soft and sometimes semi-gelatinous growths, which, however, are not malignant. The loose fibrous tissue, of which the latter are composed, contains numerous round and spindle-shaped nuclei, of which the development into fibres can be distinctly traced. A specimen, No. 3,283 in the Museum of St. Bartholomew's Hospital, possesses such characters; it lay within the sheath of the ulnar nerve, and had been growing for nineteen years; a distinct capsule surrounded it.

The next step towards malignancy is to those tumours to which Sir James Paget gave the name of "recurrent fibroids"—the fibro-sarcomata; they are composed of fibrous tissue* with a few spindle-cells scattered among the fibres, or of small spindle-cells imperfectly fused into fibres. Such tumours are only locally malignant. Cases are met with, in which the growth has existed for nine or ten years before the patient applies for relief; and they may recur as many as eight times† after removal without affecting the lymphatic glands or internal organs. Descending still lower in the scale of organisation, we reach the spindle-celled, and finally the round-celled variety of sarcoma, in which the elemental round-cell makes not the slightest effort in the direction of organization, not even to the formation of a spindle-cell.

Tumours of bone also may be studied with much advantage in regard to this question, for the amount and type of the osseous tissue produced offers a direct criterion of their power of organisation. It is only a step from the exostosis composed of perfect bone to the osteosarcoma; and this interval is broken by the diffuse osteomata, which may involve an entire bone, as the superior maxilla, or may form a large osseous mass prominently projecting from the greater part of one surface of a bone. The diffuse osseous tumours are perfectly innocent, and are composed of true bone. The osteo-sarcomata, on the contrary, are malignant, though in a low degree; and the osseous tissue produced in them may be compared to that in callus; the fibrillar or fibro-cartilaginous

* See 4786a, Royal College of Surgeons' Museum.

† See No. 4786b, Royal College of Surgeons' Museum.

matrix of which had been formed, but had become calcified while still in an intermediate stage of its development to true bone. Again, the extent to which a carcinoma of bone is calcified, varies from the production of the heavy osseous masses resembling pumice stone, to the soft sarcomata containing only a few spicules of bone, and composed chiefly of round-cells and spindle cells. Tumours springing from the periosteum are rarely observed, which may exist for years without showing any signs of malignancy. In structure they consist of immature fibrous tissue, containing numerous round and fusiform nuclei. An example of such a tumour is in the Museum of St. Bartholomew's Hospital (No. 454). It is a firm, partially calcified growth, about a foot in diameter, springing from the middle of the shaft of a tibia. The tumour was first noticed eight years before amputation, and shortly after the patient had sustained a fracture near the middle of the leg. She was a woman aged 72 years, who appeared well in health, and there was no evidence of the existence of secondary deposits.

Lastly, some tumours of epithelial origin are met with which are so slightly differentiated, so elemental, that they cannot be distinguished, except in rare instances, from round-cell sarcomata. I refer especially to the melanotic tumours which originate in connection with the pigmented epithelial cells of the rete Malpighii.

Many other facts might be quoted to show that there are tumours occupying positions intermediate between the innocent and malignant types. But these will suffice to prove that a sharp distinction, as regards their anatomical structure, cannot be made between the innocent and malignant tumours. In proportion as a tumour is more highly organised will it be more innocent, more stable, and more circumscribed; while in the measure in which its tissue is elemental or "embryonic," will it be more malignant, more diffused, and more rapidly growing. We may, perhaps, infer, from these facts, as Sir James Paget* has already suggested, that the different varieties of tumours may be produced by evolution and involution through hereditary transmission; the evolution taking place from the higher to the lower forms, as from adenoma to cancer. Considerations have been brought forward which indicate a probability that the formation of tumours is the result of the same tendencies to variation as those giving rise to the malformations by excess, such as accessory glands or glandules, multiple exostoses, or, perhaps, even the supernumerary digits. The existence of many tumours, the evolution of

* "Clinical Lectures and Essays," p. 412.

which cannot be traced, should not deter us from applying this law for the explanation of the origin of morbid growths ; for many types may be produced by an evolution of fading away of the tumour diathesis. And the exhibition of such latent tendencies especially, may be excited only by increased blood-supply and nutritive disturbance in a part.

As a general rule, the different varieties of morbid growths appear within certain periods of life, indicated in the last lecture ; and however this may be brought about, it appears probable that the nature of each variety may have been partly determined by the nutritive condition of the affected organ or tissue at the time of the formation of the tumour.

The hereditary transmission of tumours in the same form, and at approximately the same stage of life, is in accordance with the law of inheritance at corresponding periods of life ; a law by which Mr. Darwin* explains the appearance of peculiarities at certain stages in the metamorphoses of insects ; such as the modifications of a larva to the surrounding conditions in its structure and instincts, by which it is enabled to lead an independent existence. This law is exhibited under the normal conditions in the changes occurring at puberty, as the perfect development of the generative organs, and the growth of hair at various parts of the body ; in the atrophy of the ovaries and breast at the termination of the fruitful period ; and in many other phenomena, as for instance the eruption of the teeth. If we analyse the manner in which it is brought to bear we must suppose that the influence of hereditary tendency is transmitted to each and every cell in the body up the latest period of life ; and that the form and peculiarities, as well as the hereditary diseases of the individual, are the combined result of the inherent tendencies of all the ultimate elements of the body.

In the rare occurrence of cancer or sarcoma congenitally or in very early life, we see an exception to the law of inheritance at corresponding periods. This may, perhaps, be referred to the tendency in characters due to reversion to appear at an early period of life ; or to one of the numerous variations in hereditary transmission. Sir James Paget tells me that he has observed cases in which the offspring of cancerous patients have manifested the disease in infancy or at a much earlier period of life than the parents. And Mr. Hutchinson, in a recent lecture, mentioned the fact, that in all the cases in which malignant tumours appear very early in life a distinct history of direct transmission can be obtained.

* C. Darwin. "Animals under Domestication," vol. i., p. 75.

The following are some of the conclusions to which I have endeavoured to lead. Although some tumours appearing before puberty, and, possibly, a few even later, may be derived from rudiments formed in embryonic life, yet many others, and especially the sarcomata and cancers, originate in the tissues existing at the time of their appearance. The malignancy of these tumours may be referred to the elemental or lowly organised character of their constituents rather than to their embryonic nature. Finally, the evolution of the different varieties of tumours from certain primary forms may be inferred; and the primary forms are allied to, and possibly originate by, the same tendencies, which, under other conditions, may produce some of the malformations by excess.

In concluding, I must express my indebtedness to some authors, whose work I have not been able always adequately to acknowledge; and especially to Sir James Paget, from whose classical lectures I found it impossible to do otherwise than model some parts of Lecture II.

THE ECONOMICS OF DENTISTRY: AN ATTEMPTED ESTIMATION OF THE RELATION OF PROFESSIONAL FEES TO THERAPEUTIC TREATMENT.

By GEORGE CUNNINGHAM, D.M.D., Havard.*

THE first president of this Society, in his very calm and judical retrospect of the progress of Dentistry, made the following remarks:—"It is most interesting to review the progress of our friends across the Atlantic, whose establishing associations similar to this now inaugurated, resulted in their marvellously rapid progress. Minds met, views exchanged, fraternity sprang up, resulting in generally increased experience. Papers were read by the scientific, and others by the practical, each benefiting the other. This was their great element of success. Their success has been reached by *thoroughness*—thoroughness in every operation, nothing carelessly done, nothing half done. Conservative treatment is their ideal, there are no hasty extractions; troublesome cases are patiently treated, and success usual. What a sad contrast to much that is done in this country! Undoubtedly it is our duty to preserve rather than destroy, and *Dental surgery* will in the future occupy a much more important position than *Dental mechanics*."

* Read at the Annual Meeting of the Eastern Counties Branch, held at Ipswich, on April 11th.

As most of you are aware, I have had exceptional opportunities of forming an opinion as to the mode and practice of our American brethren, not only having studied in one of their best schools and also having been engaged in active practice there, but, better than all perhaps, I had exceptional opportunities of witnessing the methods of work by all kinds of practitioners, in New York, Boston, Philadelphia, Albany, and last, but not least, Lancaster, the home of our late lamented friend, Marshall H. Webb, the chief exponent of all that is most beautiful and most artistic in gold filling. It is the habit in America to admit brother practitioners to witness their daily operations at the chair. Having several months leisure on my hands, I availed myself very largely of this custom, and was thereby enabled to pursue a course of instruction, almost unique of its kind, which has proved to be of immense practical benefit, and for which I am deeply grateful. I know that I can best repay the many kindnesses of those who so freely gave, by as freely giving in my turn, and as far as the prejudices of my clientèle will permit, any earnestly enquiring professional brother will find a hearty welcome in my surgery.

For the special purposes of this paper, I shall endeavour to draw a contrast between the every-day practice of representative practitioners of the American and English schools, as I feel convinced that the best results are most likely to be attained by the assimilation of the two, retaining the excellencies of each, and as far as possible avoiding the shortcomings of either. In this country I think the position may be shortly summed up in this, that the bulk of our profession earn a livelihood by the manufacture and adaptation of artificial substitutes, with, of course, the incidental and unavoidable extractions of teeth, while the filling of teeth, and the other processes of operative Dentistry, relatively occupy a position of subsidiary importance. The consequence is that the general standard of mechanical Dentistry, especially in the case of plate work, is on the average of much higher quality than that of the average American work, while in the department of operative Dentistry we are immeasurably inferior to them. The latter part of this statement is beyond dispute, but the former part may possibly require a little explanation and qualification. To those who have a wholesome appreciation of the sectional gum blocks, so extensively used in the States, and especially of the most beautiful production of prosthetic Dentistry, continuous gum-work, which is all but unknown in this country, such a statement must seem wholly contradictory. I am, however, honestly and impartially endeavouring to contrast and compare the ordinary average practitioner in both

countries, and am fully aware of the brilliant exceptions where the practitioner is a specialist in mechanical Dentistry on that side of the water, and a specialist in operative treatment on this side. My statement being accepted as to the relative position of the two branches of our profession in this country, the question naturally arises—why should it be so? It admits of very easy explanation; it is simply the natural result of forming Dentists by a trade apprenticeship without a training in professional schools and hospitals. In America, the position of affairs as to the relative importance of these two branches is completely reversed. There the Dentist gains his livelihood by the practice of operative Dentistry, and not being proportionately as well remunerated for his mechanical work, it is not always characterised by that excellence which it should possess.

It is a matter of sincere congratulation to us that this state of affairs is passing away in both countries, but we have to make haste, for on our side there is the greater shortcoming, or we shall be left behind in the race. I am sure that our President rightly ascribed the bright characteristic of their success to the virtue of *thoroughness*. How then can we best promote this excellent quality? I boldly, say, and fearlessly maintain, by placing it on the same plane of remuneration and the same firm financial basis as mechanical Dentistry. Our schools, our literature, our associations all tend to promote the production of a higher kind of practice. As individual practitioners, by continuing to perform operations at unremunerative fees, I am convinced that we place many a stumbling block in the way of those who have already acquired or are ambitious to acquire this faculty. On the present system of practice the saving of the natural teeth is partly performed at the expense of those who require artificial substitutes, if the quality of our operative work is what it should be. More likely, however, the tendency is to degrade the quality of the work to the level of the fee, as it is not natural to expect that a man can continue for any length of time to do work well for which he is inadequately remunerated.

It is a matter of universal experience amongst us that the same patient who will readily pay a remunerative fee for a set of teeth when he finds he cannot do without them, will grudge to pay a similar remunerative sum for those services which might have resulted in the saving of the natural teeth, a process which demands a larger expenditure of our time, which calls for a higher and more expensive kind of training, and which entails a greater exhaustion of our nervous force.

I propose now to make some practical applications of the

principles of the science of political economy to the problem of professional fees, under three heads:—

1.—The present customary mode of charging.

2.—A fair and practicable remuneration, and its probable effects on both Dentist and patient.

3.—The difficulties of introducing a new system, and how they may be overcome.

1.—The present mode of charging for a Dentist's professional services is the result of trade habits and customs, and the operation of the ordinary laws of supply and demand. Competition is far the most important of all the influences that affect prices. The price of any commodity in a market is determined by the eagerness of the sellers on the one hand, and the eagerness of the buyers on the other. The competition then of Dentists for employment will tend to lower fees. The competition of the patients of relief will tend to raise fees. The actual fees obtained in any place will depend in a great measure on the relation of the number of Dentists seeking employment to the number of patients seeking relief. The fees obtained for mechanical work by Dentists, are mainly the result of this equation of supply and demand, and so far as the ordinary practitioner of good repute is concerned, they are remunerative enough, without being excessive. The ordinary fees for operative treatment are not nearly so remunerative, hence the tendency for the work to be hurried over or performed in a slovenly way, and for the patient who wants to save his natural teeth, to be neglected for the patient who requires artificial substitutes.

The price of a commodity is the measure of its utility to the purchaser, but it does not necessarily follow that the price is a fair one. Suppose that, owing to the eagerness of sempstresses for employment, the stitching of a shirt cost a penny, the penny is the exact measure of the utility of the work—but it is not a fair price, because it is not sufficient to keep body and soul together.

The utility is in the actuality—the fairness often only in the ideality. The problem, then, is how to make the ideal actual.

2.—Let us now examine the various considerations, as they severally affect the Dentist and the patient, which we may rightly take into account in forming our ideas as to what should constitute a fair scale of payments.

The considerations affecting price, with reference to the Dentist, may be summed up under the following heads:—1st, time; 2nd, labour; 3rd, skill; 4th, patience; 5th, expense; 6th, the obligations incurred in obtaining our education; 7th, disagreeableness of the occupation; 8th, the

demands of charity upon us for professional services partly or wholly gratuitous.

With reference to the patient the following considerations present themselves: 1st, appreciation; 2nd, benefit conferred; 3rd, ability to pay. In proceeding to discuss the first of these considerations, namely, time, it would be well to formulate some economic definition of the compensation we receive for our services. That compensation is twofold in its nature, it partakes of the nature of a fee for professional advice and the exercise of professional skill, and it also includes the ordinary return pertaining to capital invested in the goodwill of the practice, in the use of expensive materials and instruments, in the payment of assistant's salaries, and in other numerous expenses incidental to a well equipped establishment. Some operative Dentists are in the habit of charging solely by time. The experience of most Dentists is that such a practice is just to neither operator nor patient. It places the slow operator on a par with the rapid, it places the careless on the same level of remuneration with the careful cultivator of method and system; consequently, while the rate of remuneration is fixed, the benefit derived by the patient is of constantly varying quantity. This system has also a demoralising effect in the temptation it may offer to the Dentist to prolong his operations. A no less serious objection is the certainty that many of his patients will *think* that he does so prolong the time, whether he does so or not. Neither has this system the virtue of elasticity, by that I mean that when the demand exceeds the supply it admits of no gradual equalisation of these two important factors. Suppose an operator's time is now worth a guinea an hour, he works six hours a day, and there are six applicants for his time to whom he can do justice; if there are twelve applicants and he can only do justice to six, obviously he can only equalise the demand to the supply by raising his fee to two guineas. From the fact that professional fees are usually calculated in guineas, and no fraction of a guinea, but the half-guinea is usually employed, remuneration on the time basis alone must thus progress by great leaps or bounds. The suggestion naturally occurs here, is the patient justified in expecting, as many of them do, that for long sittings the fee should be proportionately smaller per hour? I suppose, on the principle, that they look upon it as a kind of wholesale order,—I answer emphatically, no! In our opinion the rate of remuneration should be higher, say for three hours given to one patient, than for the same time divided amongst three different patients. My reasons for saying so are, that in the former case the strain is very much greater upon the Dentist, while the patient

has the advantage of having done in three hours what would probably take four separate sittings of one hour. One thing, however, is certain, that we may take time as a basis to form our own ideas as to what fee should be demanded for certain operations. Most active practitioners complain of the want of time; my belief is that they do not fully realise the importance of this all-important factor, but they would quickly do so if they once got into the habit of keeping a record of their time at the chair.

The amount of labour required is another important consideration. Many fillings, for instance, need three or four hours or even more for insertion and finishing, hours of downright hard work, both physical and mental, trying to the very strongest constitution. The degree of *skill* requisite must always to a certain extent govern the price. Skilled labour always obtains a higher rate of remuneration than the unskilled. "The proper practice of Dentistry as a distinct calling requires three leading and well marked natural gifts—mechanical talent, artistic feeling, and the ability to comprehend medical science—three qualities seldom found in the same individual." The value of highly skilled labour may rise with the difficulty of attainment. The product of a great operator's plugger may be as eagerly sought after as the result of a fashionable artist's brush, and probably is more limited in supply. Ten, twelve, fifteen, and even twenty guineas have been paid for stopping a single tooth, and I am credibly informed of one operator who is making his five to seven guineas an hour. An American practitioner tells the following story which is very much to the point:—"An old curmudgeon expressed himself on an operation for strabismus performed upon a member of his family as follows; 'The doctor raised the eyelids, clipped a little cord with his scissors, then turned her round to me and charged fifty dollars for it.' 'How many years,' said the dentist 'of patient study and practice do you imagine it cost that man to enable him to perform this operation so neatly and so quickly?' He heard no more murmuring about the price."

The amount of *patience*, too, is far from being an unimportant factor. For many persons we work without feeling much fatigue, because we know that they are endeavouring to assist us as far as lies in their power. We can, therefore, work rapidly and easily with the best results. On the other hand a garrulous patient may annoy us in a thousand different ways; all kinds of stupid questions are asked, the head once placed in a suitable position is immediately removed, and above all there is a continual request in a petulant tone, if we have not finished. These are the

kind of patients which, as an American Dentist says, "make us grow old faster during an hour's sitting than in a week of pleasant practice." Wear and tear of brain and muscle like this should indeed be well remunerated.

The same Dentist suggests that "if such patients were informed that the price would be proportionate to the amount of annoyance they give, it would serve to modify their conduct very materially."

Expense is a factor which some Dentists would perhaps, refuse to acknowledge, but I can point out to you one or two instances in which its effect is immediately apparent. Contrast the number of stoppings that can be made from one packet of, say, Ash's rock cement with the number obtainable from a packet of the same stopping put up in hermetically sealed glass tubes. In small gold operations the value of the material, truly, is not of much moment, but when it comes to packing away, as is not unfrequently done, nearly a whole book of gold, the element of expense becomes of considerable moment. I do not suggest that this question of value should necessarily be mentioned to the patient as a plea for obtaining a larger fee, but nevertheless it is an element which may justly be considered in determining what those fees should be. Then again the general rate of office expenses is a varying factor, the higher the fees obtained, the more liberal should the expenditure be, both in accessories for the operating room and in making the reception room as comfortable and even as luxurious as circumstances permit.

Obligations incurred in obtaining our education.—In the consideration of this factor the political economist comes to our aid. The labourer expects by labour to maintain himself in the standard of living customary in the grade in which he has been brought up; this is roughly indicated by the expenses which are necessary to qualify a youth for work of different kinds. In the discussion of this proposition, representative workers are taken and the standard of living is compared, barristers being taken to represent the professional and highest paid class, watchmakers are the skilled mechanical class, and labourers are the unskilled class. In place of barristers we may now somewhat fitly for our purpose substitute Dentists, inasmuch as by the Dentists Act, an expensive professional training is rendered obligatory. The more expensive and the more complete the training, and the higher the qualifications, the higher is the standard of living that may be rightly expected. To maintain that higher standard of living, necessitates a higher scale of remuneration than that of the mere skilled mechanic. In our profession, the mere mechanical assistant more nearly approaches the case of the

skilled mechanic as represented by the watchmaker, while the highly trained gold operator or the surgeon practising Dentistry may be taken as representing the highest grade of all.

If a trade has any disadvantage, such as unhealthiness, higher wages will be necessary to induce men to enter the trade than would have been required in the absence of the disadvantage. The necessary addition to the wages may be called the money value of this disadvantage. Is Dentistry a desirable occupation? In the eyes of the public there can be no doubt as to the undesirability of it as the vocation of a lifetime. Its undesirability justifies the demand of a high rate of remuneration.

The pursuit of operative Dentistry is much more unhealthy than that of mechanical Dentistry, and ought therefore to be more remunerative. If we contrast the obituary notices in the English and American Dental journals, we cannot but be struck by the greater and earlier mortality of practitioners who devote their greatest efforts to the saving of the natural teeth.

(To be continued.)

CORRELATED DISEASES OF THE TEETH AND EAR.

By JOSEPH RICHARDSON, M.D., D.D.S.

WHILE there is, on the part of Dentists, a general recognition of the existence of sympathetic nervous relations between the teeth and other organs or regions more or less remote, it is to be feared that anything like a critical knowledge of the exact nature of this relationship is quite vague and limited. In so far, at least, as the subject under consideration is concerned, there is, it is to be apprehended, a pretty solid substratum of truth in what Dr. Sexton, an eminent aural specialist of New York, has to say of us, namely, that "the apathy which has always existed on the part of the medical profession regarding the teeth has left the treatment of these organs in the hands of men who have occupied themselves almost exclusively with its mechanical department, and who, as a rule, have but little to do with the teeth in a medical aspect," and then laments, "that a field of such interest has been abandoned by the profession."

While we may wince a little under this accusation, it may be as well to accept it as at least a partial statement of the truth, if it will only serve as a stimulus to higher effort in the direction of an increased knowledge on our part of the "medical aspect" of our calling. That we have made some progress, however, in the direction indicated, would appear from the fact that, in a prize essay on this subject published

in the "American Medical Journal," 1880, Dr. Sexton had recourse to Dental authorities for a large part of the pathological data in relation to the diseases of the teeth and gums, which it was necessary for him to employ in elucidation of his subject. Besides, Dentistry as a science is quite young—less than half a century old—while otological science may be said to date from the time of Du Verney's treatise on the ear, nearly two hundred years ago. It took the medical profession about two centuries to emerge from darkness into light in respect to the true nature of the nervous relationship we are considering. The writer already quoted says:

"The otology of the fathers, indeed, did not include a knowledge of a nervous relationship; and even at the beginning of the present century the writings of Saunders, Saissy, and others, allude to diseases of the teeth as affecting the ears in a manner most meagre, although anomalies of the throat were spoken of as causing deafness; principally, however, as offering a mechanical obstruction to the faucial opening of the Eustachian tubes. Even Toynbee, Wild, Triquet, and their contemporaries, failed to contribute to the knowledge of this subject in any material manner. The important work of clearing up this subject was left to the otologists of the present day, and in turning to our principal writers we find the nervous relationship of the teeth and ears clearly recognised." The evolution of knowledge was slow on this subject, but we accept the results with thanks, and should endeavour to turn them to some practical account in the practice of oral surgery.

Availing myself of the researches of some of these later writers on otological science, I shall confine myself to as brief a consideration as possible of the sympathetic relations of the teeth and gums and the ear, and incidentally of the brain. Even a superficial survey of this limited field of inquiry, for it might be extended as well to the eye and other organs or regions, must impress every one with its practicable value to us as practitioners of oral surgery, and I therefore solicit your patient attention to what may be offered.

It is not so much of mere functional disorders of the ear manifesting themselves as reflex neuralgias, that I shall speak, but of structural lesions or trophic diseases affecting the several parts of the auditory apparatus. This aspect of the subject is one about which the greater interest centres considered in its relation to diseases of the teeth and gums as the primary source of such injuries through the operation of the law of reflex action. It will be curious and instructive to know how deaf-mutism and fatal convulsions in child-

hood, or partial or complete loss of the sense of hearing in adult life may be induced primarily by the eruption of the deciduous teeth in the one case, or decayed teeth in the other, for all these grave sequences are sometimes clearly traceable to the primary disorders of the oral cavity. The relation of a single typical case will serve as a text to point out the nature of the relationship between diseases of the teeth and trophic tissue changes of the ear.

Dr. Charles H. Burnett, of Philadelphia, author of a treatise on the ear, relates the following case. I shall omit much that relates to topical treatment of the affected organ.

"In July, 1878, Mrs. B. P—, aged 40, consulted me in reference to a discharge of the right ear, which had annoyed her for some time. Her statement was, that the discharge had set in for an attack of not severe ear-ache some months previous; that the discharge then grew slowly less, when another attack of pain in the ear was followed by an increased discharge, again to diminish and again to increase, after the now frequent attack of pain. The hearing had at no time been affected to any extent, being only slightly dulled sometimes, apparently by retention of small quantities of discharge. The latter had never been very great, and the chief annoyance seemed to be the recurrence of pain and the odour of decomposing matter in the ear. There had been some ear disease on this side after scarlatina in childhood, but the ear had healed, and remained a good one until quite recently, when the above symptoms showed themselves. The patient had no reason to assign for her aural disease.

"Upon inspection, the membrana tympani was found perforated in the inferior posterior quadrant, at which point there were some small granulations.

"The posterior wall of the auditory canal, near the membrana tympani, was ulcerated, showing a granulating spot, and the fundus of the canal was bathed with light-coloured pus. The Eustachian tube was easily inflated by Valsalva's method, and the perforation whistle readily obtained. The mucous membrane of the tympanic cavity, seen through the perforation after the ear was cleansed, appeared healthy, thus showing that the disease was confined chiefly to the outer surface of the membrana tympani and the posterior wall of the canal; in fact it suggested itself to me that the disease was confined chiefly to the outer surface of the membrana tympani and the posterior wall of the canal; in fact it suggested itself to me that the disease might have originated in the canal and spread to the drum-head; but it did not occur to me, until after prolonged treatment, that the disease in the ear might be purely reflex, and due to

several diseased teeth in the lower jaw on the right side as it finally was shown to be."

The treatment of this case was continued for nearly four months before Dr. Burnett discovered the origin of the ear trouble. Partial relief was obtained at times, only to be followed by a recurrence of the unfavourable symptoms. At the patient's last visit Dr. Burnett says: "Though the objective symptoms were good, the patient said she had some of the old pain, which she had felt so often and knew so well as a forerunner of renewed ear discharge. A casual remark about her teeth, viz.: that they had long given her discomfort, led me to look into her mouth; on the right side of the lower maxilla, the first and second molars were seen to be largely decayed and the gums about them inflamed and sensitive. This at once furnished a clue to the origin and stubbornness of the disease in the ear. As soon as these teeth were extracted all discomfort in the mouth ceased, and from that day to this, two years, no pain or any other symptom of aural disease has shown itself."

There is, I think, no mistaking the testimony of this case. The prompt subsidence of the aural trouble following the extraction of the teeth points clearly to the sympathetic and dependent character of the former. A study of the nervous relationship between the teeth and the gums, and the external meatus, or auditory canal, the part most prominently affected in the related case, and the manner in which trophic lesion of the latter is established by reason of such relationship, will serve as a key to an understanding of the source and nature of similar morbid processes sometimes affecting other parts of the auditory apparatus, as the Eustachian tube, the middle ear or tympanic cavity, and the labyrinth.

Before tracing the continuity of nerve fibre between the teeth and ear, there are some ascertained facts relating to nerve function, a knowledge of which seems essential to an intelligent comprehension of the subject under treatment.

Dr. Edward Woakes, of London, one of the most careful and intelligent exponents of the doctrine of reflex diseases of the nervous system, after relating the case of an enlarged gland below the external ear, associated with diseases of the external meatus, and cured by the extraction of a decayed tooth, says: "Now the question before us is to find the solution of the train of symptoms just detailed. We have the phenomena of pain, inflammation and suppuration occurring in an organ widely separated from the recognised exciting cause, and in tissues histologically distinct from those manifesting the morbid changes. The only obvious connecting link between the regions interested is the con-

tinuity of nerve fibre. The simple continuity of sensori-motor nerves is insufficient to produce the conditions under review; we must seek yet farther for the true medium by which they are brought about. This will be found in the relations of the vaso-motor nerves, and the functions which it is their office to fulfil.

"As it is this portion of the nervous system that is mainly concerned in the morbid processes we are examining, it will be necessary briefly to enumerate the chief points in its economy. By far the most important fact in connection with the vaso-motor system is that, with one or two exceptions, all sensori-motor nerves comprise fibres belonging to it, and that these fibres run in a contrary direction to the cerebro-spinal nerve with which they are associated. Thus, in speaking of a cerebro-spinal nerve, say the vagus, we describe it as pursuing a course from the medulla to the respiratory organs, and the several viscera which it supplies. At the same time it must be remembered that it contains other fibrillæ in its sheath running from the viscera toward the nerve centre, some of which at intervals leave the sheath and enter a ganglion of the sympathetic, in their course to the general vaso-motor centre, situated in the medulla oblongata, at a point which has scarcely been determined for the human subject, though it has been accurately fixed in the rabbit. These fibres, then, are centripetal or afferent in their function, conveying impressions from the tissues to the subcentre constituted by the ganglion, or to the general vaso-motor centre.

"When these fibres enter a ganglion, they communicate with its caudate cells, which important fact brings them into communication with other nerves coming from different directions to the same ganglion. When the afferent fibres leave the ganglion, they pass backwards by one of the two cords, leaving the ganglion to join the spinal cord, and in it traverse the anterior columns of the cord in an upward direction to reach the primary vaso-motor centre.

"The efferent or centrifugal fibres in relaxed relationship the foregoing, or afferent fibres, follow an exactly similar with course from the general centre downwards, likewise along the anterior columns of the cord, which they leave opposite an inter-vertebral foramen to join a sympathetic ganglion, constituting its second root, and after similarly mingling with the caudate cells, quit it to seek their several destinations on the coats of the arteries whose calibre they regulate. Further, it is to be noted that by the automatic action of the *general* vaso-motor centre, the normal calibre or tone of the vessels is maintained."

(To be continued.)

British Journal of Dental Science.

LONDON, JULY 2, 1883.

A SUBJECT fraught with many difficulties, but in the main calculated to bring into shape the vexed question which we as Dentists have to deal with, namely, professional fees, has formed the stand-point of Mr. Cunningham's paper, which was read before the Eastern Counties Branch of the British Dental Association. Much that was said no one can dispute, and it would be a good thing if the public could be taught the rational truth that the natural tooth is vastly superior to the artificial substitute. With that we might expect adequate remuneration for the labour so spent upon its preservation. Without wishing to depreciate English Dental Surgery, we must all admit that too many teeth are lost, and as a consequence, artificial teeth are found in the mouths of more adults in comparison with the Americans. We may argue that the English have better teeth than the Americans, and therefore do not have their attention brought to them early in life, and the majority having good incisors, there may be a delicacy about having the glittering gold plug always in view. We give our American cousins the credit of having indifferent teeth compared with ourselves, for it is proved that they having created the demand the supply has followed. When it became a fact that hundreds of thousands of beings were suffering with disease of the teeth the means were found to arrest it. No country has brought an art to such a state of perfection as America has in operative Dentistry, and without allowing any nation to excel us in our histology and pathology, we must give credit to those who have given us the practical means of arresting that disease from which few during their existence can escape.

There is now a good opportunity for the younger men of the profession to force this advanced Dental treatment upon

the public if they like, for under the admirable teaching of such men as now instruct the students of our metropolitan schools; they have had all the difficulties which they are likely to meet with cleared up by practical demonstrations, and the fillings, which these gentlemen put in. With the good work done, the next thing is to take up the threads of Mr. Cunningham's paper. In what way are we to secure remuneration? Most fillings take a long time, with an immense amount of trying labour. Our only answer is, that it is always less expensive for the patient to pay a few guineas for the preservation of each tooth than to put up with the indifferent treatment which must be made for a moderate fee. The guinea and half-guinea are serious obstacles to the establishment of fair fees. When we compare them with those of the lawyer and general practitioner, they are out of proportion to their relative value. To put in a filling or perform an operation for a guinea may not be sufficient remuneration, and yet to make it so, we must double it, because there is the false pride that we cannot take anything but the guinea or half a guinea. The Dentist has yet to know that he is expected to deal with his patients in a similar way as the lawyer with his clients, and where additional time and labour are called for, a fee can be made in just proportion. Our conscience is our taxing master, and where a fee is honestly earned it will never be disputed.

Manipulative Miscellany.

All instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month, they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits, and without any intention or wish to pit one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

DENTAL MIRROR WITH ELECTRIC LAMP ATTACHED.

MR. J. S. DICKIN, of Southport, has sent us a dental mirror, to which is added an incandescent lamp, for our inspection. The mirror is one of the ordinary ball and socket

oval pattern, with a vulcanite instead of ivory handle. Just below the ferrule is an arm, to which is hinged a gilt circular clamp, with a movement which enables it to lie flat on the handle on approach to the mirror. The lamp consists of a glass tube one-sixth of an inch in diameter, with a carbon rush filament in vacuo, and has a moveable guard to prevent the heated glass touching the mouth, and can be turned in any direction. Being mounted on a vulcanite base it can be slipped into the gilt circular clamp, and is ready for connecting with the battery. This is accomplished by the wires passing through loops at the end of the handle and secured to screw washers, the clamp acting as a medium for the electricity to pass to the lamp. We are not prepared to say whether this contrivance will be manufactured for the market, but its use is quite apparent.

DR. R. T. FREEMAN'S GAG.

THIS is a new mouth gag, made by Mr. Collins, of Poland Street, something like one designed, we believe, by Mr. Coleman, but more compact. It has the advantage of always being used *outside* the mouth, and can be placed on the centre or either side teeth. The vertical connection of the two arms is formed of one tube sliding within another, having a

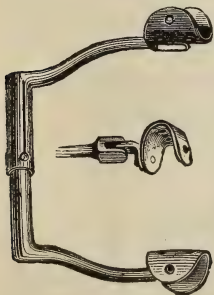


FIG 1.

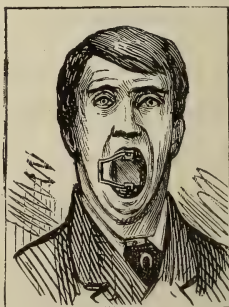


FIG 2.

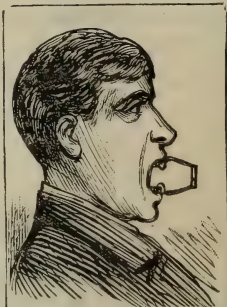


FIG 3.

spiral spring within them always keeping them apart (Fig. 1). By pressing this bar the opening of the gag is made very small, in which condition it can be inserted; but the slightest opening of the mouth is followed by the spring, whilst the pressure of the teeth being at the extremities of the arms, by the very leverage joins the two tubes together, and prevents their closing. The tooth plates are doubly hinged to the frame, admitting of their adjusting themselves to the level of the teeth, and of the frame being turned from one side of the

mouth to the other without removal. For removal it is only necessary to again press the vertical bar. Fig. 2. shows it in *situ*, and Fig. 3. in process of being turned over.

Literary Notices and Selections.

NOTES ON OPERATIVE DENTISTRY.*

(Concluded from p. 564.)

FOLLOWING the same views as Tomes and others, with the addition of Bödecker's vascular network, the structure of cementum is described with great clearness. We fail to see how the outermost layer joins the gum, at the neck of the tooth, and Naysmith's membrane is seen to commence at this point. Allowing that the fibres of the periosteum join the gum at the neck, Naysmith's membrane is clearly shown to be the continuation of the cementum, its extreme thinness preventing the formation of lacunæ. Our progress is arrested when we come to the description of the structure of enamel, for we are told that "beaded fibres occupy the central portion of the interstices *between* the enamel rods." This view cannot be maintained when it is remembered that each enamel column calcifies from its periphery, and the only trace of organic matter in adult enamel exists in the centre of each column, so that where a fracture has been made in the enamel it has run in the centre of the column, and not between it and its neighbour; also that the columns coalesce at an early period of calcification.

The structure of the periosteum or pericementum, as it is described here, is given at great length, richly coloured with transatlantic terms, and rendered not too clear to the student mind.

In dealing with the Dental pulp the existence of lymphatics is asserted, and the dentinal fibril is said to arise from a living reticulum, and not from the odonto blast cell, according to Beale and Tomes. Following that, we come to the more important part of the work, and we must own to being especially interested in the way one process follows another in the development of Dental caries. Mr. Sewill will hardly agree with Dr. Frank Abbott when he says that "Caries of a living tooth, therefore, is an inflammatory process, which beginning

* "Notes on Operative Dentistry." By Marshall H. Webb, D.D.S., Philadelphia. S. S. White Dental Manufacturing Company.

in a chemical process, in turn reduces the tissues of the tooth into embryonic elements."

The sections on the application of the rubber dam and the preparation of filling materials, must be read to be appreciated. When cavities extend below the level of the gum the clamp is recommended to be put on first and the rubber afterwards, as it is carried lower down than is the case when the rubber is adjusted first.

We question whether when only a line of the oxychloride of zinc is left between a piece of porcelain—used to fill cavities—and the wall of enamel, decay is not likely to take place, for it is the dissolution of the filling that produces the further decay and not the attrition, as one would be led to believe by the statement of the protection of the hard porcelain.

The remaining sections, namely, the "Preparation of cavities for restoration of contour," "Placing crowns on the roots of teeth," "Irritation and death of the pulp," "Filling pulp chambers," "Treatment of abscesses," "Percementites," and "Necrosis," are well worth perusing, for although we should like to see one or two additional methods of treatment mentioned, there is sufficient information given to enable the student to undertake successfully work of the highest order, and in recommending the book we consider it fulfils a long felt want, as it gives in a clear and incisive way the latest and surest principles of Operative Dentistry.

TWO DEATHS FROM CHLOROFORM.

WE find in local papers, of which copies have been kindly forwarded to us, reports of two deaths this week from chloroform inhaled as an anæsthetic. One of the daughters of Mr. Hutcheson, Chief Magistrate at Turriff, Aberdeenshire, suffered greatly from the toothache, and was compelled to have an operation performed. Notwithstanding this, the pain continued, and to alleviate her sufferings she procured some chloroform and put it in a handkerchief and applied it to her mouth. Subsequently she retired to her bedroom, and as she did not reappear it was hoped she had obtained relief. The next morning she was found dead on the floor. Deceased was only twenty, and was a great favourite in the district. A millworker, named Margaret Houston, seventeen years of age, and residing at Penicuik, died while under the influence of chloroform, administered to her by Dr. Kennedy, of Penicuik. She had gone to Dr. Kennedy to get three teeth extracted,

and insisted, against his advice, on being put under chloroform during the operation. We would again express the anxious wish that practitioners in whose practice such cases occur, and under whose professional attention they come, should take an early opportunity of getting the clinical facts of the case on record in our paper for the purpose of the general information of the profession, in furtherance of our accurate knowledge of the circumstances under which anæsthetics of all varieties prove fatal. This is, we think, an incumbent duty.—*British Medical Journal*.

THE SURGICAL TREATMENT OF FACIAL NEURALGIA.

WE understand that Mr. Chavasse's case of excision of Meckel's ganglion and the superior maxillary nerve, is the first operation of the kind performed in the British Isles. In February, 1880, Mr. Walsham stretched the infra-orbital nerve, the patient being a woman, aged 50, subject to intractable neuralgia—a case, in fact, precisely similar to Mr. Chavasse's; it is recorded in an original article, by the operator himself, in the *Journal*, vol. ii., 1880, page 1009. We are informed that this patient has never suffered from any recurrence of the neuralgic pain since the stretching of the infra-orbital nerve; and, also, that before the operation, removal of the sphenopalatine ganglion was proposed. The patient, however, expressly stipulated that she would not consent to any operation being performed, unless first assured that it did not entail the slightest risk to life. Mr. Walsham, moreover, was not strongly in favour of removal of the ganglion; and, it must be borne in mind, that he concludes the article above referred to, by observing that a morbid condition of the sphenomaxillary ganglion had, at that period, already been suggested as a cause of intractable facial neuralgia; and the ganglion had already been removed several times. It is, however, not improbable, the author added, that as the superior maxillary nerve must be stretched in the operation, the benefit obtained might be traced to the stretching of the nerve rather than to the removal of the ganglion. The fact that both stretching and excision of portions of the second division of the fifth pair of cerebral nerves have been performed more than once shows, at least, that facial neuralgia may resist all palliative treatment, that sufferers from this intractable disease may urgently desire operative interference, and that competent authorities and operators are not quite decided as to the superior merits of one out of two measures. No satisfactory decision

will be obtained until many more such operations are performed, with the most scrupulous comparisons of results, as gleaned from histories of the course of the cases for years after the operations.—*Ibid.*

EPITHELIOMA OF TONGUE; HÆMORRHAGE FROM
LINGUAL ARTERY; LIGATURE OF COMMON CAROTID;
DEATH FIVE MONTHS LATER; NECROPSY.

(Under the care of Mr. N. P. BLAKER, Sussex County Hospital.)

W. H——, aged 45, a grocer, was admitted on Dec. 24th, 1881, with an ulcerated tongue, which on the previous day had bled profusely. The tongue was first affected three months before, when a sore appeared on its right border. The patient did not seek treatment till a week before admission. No history of syphilis could be elicited.

State on admission: There is very extensive ulceration of the right side of the tongue from the tip to the epiglottis; the ulceration extends on to the floor of the mouth; the edges of the ulcer are everted and the surrounding parts are hard; there is an enlarged gland beneath the jaw; the breath is foul; he has not any pain to speak of; on the same side the last molar tooth is prominent and black. At 4 p.m. hæmorrhage again occurred. Allowing for the saliva, he must have lost a pint of blood. Tincture of perchloride of iron was applied with lint, and the bleeding gradually stopped. About an hour later bleeding recommenced. It was at once stopped by compressing the carotid artery against the transverse process of one of the lower cervical vertebræ. The patient became very blanched. A third of a grain of morphia was injected subcutaneously. As he fell asleep he had a few convulsive starts in the limbs, and breathed stertorously; he recovered in about a minute. There was profuse perspiration at the time, especially at the head. Chloroform was given, and Mr. Blaker tied the common carotid artery. No difficulty was experienced. A silk ligature was used, and one end was left hanging from the wound, which was stitched with silver. Beef-tea, arrowroot, brandy, and laudanum were given by the bowel every three hours.

Dec. 26th: Patient is comfortable. Twenty hours after the operation the temporal artery was felt pulsating indistinctly. Takes fluid food by the mouth. Temperature 98°, pulse 120.

Jan. 2nd, 1882: The tongue has much improved in appearance. The edges of the ulcer are less everted, and

the ulcer itself looks as though it were healing.—12th: Complaints of face-ache up to the right ear.—20th: Has had a mild attack of erysipelas. Condition is now very satisfactory. The ulcer on the tongue looks much more innocent. The edges are bevelled and covered with epithelium.—23rd: The ligature came away with slight pulling (twenty-ninth day after operation). 29th: Feels and looks ill. Tongue dry and coated. Diarrhœa. Pain in the left arm from the shoulder to the elbow. No affection of the left leg.—31st: Has pain in the right knee. This is hot, very tender, and is tense with fluid. No shivering. Cheeks flushed. Morning temperature 97.4° , evening temperature 101° .

March 1st: The arm and knee are much better again. Morphia injections have been given for pain in the tongue and right side of the face and head.

April 1st: His condition is much worse. The ulceration on the floor of the mouth has extended, and induration passes from beneath the jaw to the wound of the operation, which has reopened.

May 12th: He is very weak and emaciated; brought up about half a pint of blood, which probably came from the tongue. This is the first time hæmorrhage has occurred since the operation.—27th: To-day he died from exhaustion.

Necropsy.—Very thin. There is a large sloughing wound in the right side of the neck. The two ends of the occluded carotid artery are seen lying in this wound. The sternomastoid muscle of this side is converted into a hard cancerous mass. The glands are infiltrated. (Brain could not be examined.) Two-thirds of the tongue are ulcerated away, and the rest is infiltrated. The cancer extends down into the right side of the neck, but does not attack the larynx or pharynx. Epiglottis œdematous. No cancer elsewhere.—*Lancet.*

TO REPAIR SLIPPING DISKS.

USERS of the sand-paper or other disks, mounted on the ordinary screw mandrel, are doubtless troubled at times to prevent their slipping. The slipping is a result either of the wear or careless make of the mandrel, the centre of the screw head coming to a bearing first instead of the periphery. To remedy, take a sharp chisel and, while the mandrel is revolving—without the screw head—pare down the centre so that the end will be somewhat dishing. See that the screw will turn *quite in* and freely, without the disk, and there will be no further trouble, at least, till the operation needs repeating.—*New England Journal of Dentistry.*

BROMIDE OF ETHYL, THE MOST PERFECT ANÆSTHETIC
FOR SHORT, PAINFUL SURGICAL OPERATIONS.

BY JULIAN J. CHISHOLM, M.D.

THREE years since, when the Bromide of Ethyl was brought prominently forward as a substitute for chloroform by Dr. R. J. Levis, and Dr. Laurence Turnbull, both of Philadelphia, I, with other surgeons, experimented with the new anæsthetic, with the intent of comparing its reputed advantages with the well-known agents, sulphuric ether and chloroform. I discarded it after a very short trial on account of its apparent inefficiency, and because of the very evanescent nature of the sleep produced by it. I found great difficulty in putting my patients to sleep; and when at last narcotized, they would suddenly recover consciousness at most awkward periods in the midst of eye operations, to my serious annoyance. In two cases especially, in which I continued the inhalation from time to time as I would have done with chloroform, until upwards of an ounce of the bromide of ethyl was used, nausea and vomiting followed, which in its severity and duration, I have rarely seen exceeded in the most sensitive of my chloroform patients. For twenty-four hours the sickness of stomach continued. The hospital ward in which the patients were lying had its atmosphere redolent with the garlicky odour of phosphorus, and the breath of these patients was offensive from the same smell on the day after inhalation. For some months after this very unsatisfactory brief experience my bromide of ethyl bottle remained corked. About this time great publicity was given to a death in the practice of Dr. Marion Sims, from ethyl administration, in which several ounces had been used, and the narcosis kept up for a long period. This was the first time that ethyl had been inhaled for anæsthetic purposes in New York City. This first fatal case was followed soon afterwards by a death under the use of ethyl in the practice of Dr. Levis, of Philadelphia. These two fatal cases put a very sudden stop to the use of bromide of ethyl in the United States.

Confiding in the statements of Drs. Levis and Turnbull, both of them surgeons of large experience, that the bromide of ethyl had good properties, I was still disposed to believe that the new and comparatively unknown anæsthetic possessed attributes which we had not succeeded in developing. I therefore again commenced experimenting cautiously with this new remedy. By degrees, as I became better acquainted with it, it secured my confidence. For the past year I have used it on an average at least once every day, often administer-

ing it four, five or six times, during the day's work, in private practice and at the hospitals. Familiarity with its peculiarities and effects, and the discovery of the proper method of administering it, has taught me to value its advantages more and more highly, till now I consider it *par excellence the anæsthetic* to be used for any painful surgical operation which can be quickly performed. *Having found out how to use it, and what to expect from its administration, I can obtain the most brilliant results from it, and have become quite enthusiastic in its praises.*

In every patient, using the needful precaution, I have produced complete narcosis in less than one minute, often in from twenty to thirty seconds. A deep sleep which, however, will not last more than one or two minutes. From this speedily induced narcosis recovery is rapid and complete, with neither nausea nor heaviness, so that as a rule five minutes after the inhalation the patient is as much himself as if no anæsthetic had been used. Experience has taught me that these are the peculiarities of the bromide of ethyl administered for anæsthetic purposes, and that as such they will prove of inestimable value to surgery.

The following very interesting cases, patients recently operated upon, will illustrate how thoroughly and speedily the brain resumes its full function, after complete ethyl narcosis :

Miss M., a self-possessed little girl, eight years of age, desired to have an ugly squint corrected, and exhibited no timidity in witnessing the preparations needful for its performance. Prior to getting upon the table she had her collar loosened to remove any impediment to respiration. In doing so she took two roses from her dress and placed them on a vacant chair near by. She was then put on the operating table and the bromide of ethyl administered. A very few inspirations produced deep sleep, under which the tenotomy of the rectus muscle was performed. The ethylization and squint operation occupied fifty-six seconds: the time was taken by one of my assistants. Within three minutes from the commencement of the narcotism the child was perfectly awake, and was ready to get from the table. When on the floor she walked at once to the chair, and within four minutes from the time that the anæsthesia was commenced she was engaged in pinning these roses into the front of her dress, with a composure which showed not only no present discomfort but a complete oblivion of the experience through which she had just passed.

The second case, also one of convergent squint, was that of a boy, fifteen years of age, who seemed very anxious to get rid of his deformity. After getting on the operating table,

before the medical class at the University of Maryland clinic, I told him that when the towel was placed over his face it would have a very choking sensation, but that he could not choke from it. I also showed him how to take quick and full inspirations, so that the suffocative sensation would entirely pass away before he had breathed a half dozen times. When the folded towel, upon which a drachm of ethyl had been poured, was placed over his face, he commenced a most active respiratory movement, which in a very few seconds quieted down into deep sleep. Within thirty seconds from the commencement of the ethylization narcotism was profound. The operation was commenced without delay and the division of the tendon speedily consummated. The entire operation from the commencing of ethylization to the perfection of the tenotomy, did not exceed sixty seconds. A minute had not elapsed from the completion of the operation when he awoke, and jumping from the table to the floor of the amphitheatre he cried out in a jubilant voice, "I am all right," much to the amusement of the medical class who crowded the benches: a very different behaviour from that which follows the inhalation of chloroform or ether. In this case the entire period, from the beginning of the inhalation, through the stage of complete narcosis, to perfect restoration, did not exceed two minutes.

A *third case* was that of a gentleman of extremely nervous temperament, who was disfigured by a tarsal tumour. On account of his dread of being operated upon, he had carried this ugly swelling on his lid for over a year. One Sunday morning he presented himself at my office with the request that I would operate upon him at once, making as a condition that I would give him chloroform. It is an established rule with me never to administer an anæsthetic without an assistant being present. Having explained the necessity of this course I requested him to meet me at the University Hospital within an hour, so that I could secure the presence and aid of the resident physician as my assistant. I anticipated his arrival and had everything prepared for his coming. I received him on his entering the vestibule of the hospital and accompanied him at once to the amphitheatre. With no loss of time he got upon the table and was told to take full inspirations of the medical vapour in spite of the suffocative feeling excited by the ethyl. As soon as the cone containing a drachm of bromide of ethyl was placed over his nose and mouth, he commenced a series of slow, deep inspirations, which terminated in full narcosis by the time the eighth inspiration was taken. His breathing was free, pulse strong, colour of face bright, with the appearance in every respect of

ordinary, deep, natural sleep. Desmarres' ring forceps or clamp soon secured the lid, the tumour was freely opened from the conjunctival surface, and by means of a cutting spoon the epithelial lining of the cyst was speedily scraped off. A few rapid rotations of the spoon effected this very promptly. This manipulation was a matter of a very few seconds. The awaking was equally prompt. Within two minutes from the time he laid upon the table he was again standing on the floor. Upon being questioned, he said that he was perfectly himself, and had felt nothing whatever of the operation. He asked whether all was over, and when assured of it, he put on his hat and walked out of the room. Within six minutes from the time of his arrival he was again passing out of the entrance door of the hospital into the street, having, during this very short period, been ethylised, operated upon and resumed his natural condition of feeling.

I might go on enumerating case after case, until my entire experience with the wonderful efficacy of ethyl, in all cases of what I now call primary anæsthesia, was gone through with, covering at this time over 400 inhalations. These three cases, however, will suffice to show how thoroughly the brain recovers its perfect functions after the deep but very transient impression brought about through the inhalation of the vapour of this potent agent. Persons who, only three minutes before, had been in such deep sleep that they were insensible to pain, now walking out of the operating room with a firm tread and with a clear brain.

On account of its activity, efficiency, and the evanescent nature of its narcotic effects, the bromide of ethyl has become my favourite anæsthetic for all surgical cases, in which, by quick manipulation, I can perfect a painful operation in a short period.

Experience, by daily administration, has taught me this very valuable lesson, viz: that the bromide of ethyl is not an anæsthetic which can be advantageously repeated or its inhalation be continued for any length of time. This is one of the serious mistakes which we made in our early experiments and which induced me, through ignorance, to discard the new agent as unreliable.

Its wonderful action is obtained during the first minute of its inhalation and what I have called its primary anæsthesia.

In cases, in which from some interference with the rapidity of the manual of operative procedure this primary anæsthesia wears off, and a second, and even more numerous administrations have to be made to keep up the anæsthetic state until the operation can be completed, while the narcosis can at all times be produced, nausea is very apt to follow. By this frequent

repetition of the inhalation, a mental depression is established, as from the continued use of chloroform or ether, which may last many hours.

Fortunately there are many surgical operations of a very painful nature which can be perfected within the short period of a primary ethyl narcosis. Abscesses can be lanced, cysts emptied, sinuses laid open, wounds probed, strictures incised, muscles divided, ingrowing nails removed, surfaces cauterized, examinations made necessitating painful manipulations, and even amputations may be performed. It must not be forgotten that prior to the discovery of anæsthetics, Mr. Liston urged the general adoption of flap amputations, because all painful cutting, including the sawing of the bones, could be completed in so many seconds and did not require minutes at the hands of dexterous surgeons.

In eye and ear surgery, in which I am now exclusively interested, the irritable eyes of children can be carefully and thoroughly examined, tumours can be removed from the lids, abscesses punctured, orbital sinuses explored, the lachrymal canals laid open, the nasal ducts probed, foreign bodies removed from the cornea, canthotomy practised, crossed eyes straightened, the operation for artificial pupil perfected, ingrowing lashes destroyed by the cautery, needle operations for soft or capsular cataracts effected, and even optico-ciliary neurotomy completed. All such operations I perform now under a primary ethylization, if the patient exhibits any timidity or expresses a desire to be put to sleep. Cataract extractions, enucleations and many lid operations require more time for their safe performance than ethyl narcosis permits. If every preparation be made in advance, instruments arranged in the order in which they are to be used, and placed within easy reach, and if the surgeon is able to manipulate with dexterity, it can be readily seen that a very large part of the painful procedures of surgical practice might be made altogether painless by taking advantage of the wonderful nature of ethyl narcosis.

In eye surgery I not only use ethyl daily, but if deprived of it would feel that I had lost one of my very best assistants.

What can be more satisfactory than the correction of that ugly deformity, squint, under the perfectly quieting influence of the bromide of ethyl, in less than one minute, to cover ethylization and the tenotomy? In fifty-two seconds, as measured by the stop-watch, I have ethylized the patient and completed the division of the faulty muscle. The patient, quite himself in two minutes more, finds the ugly deformity gone, and without the slightest knowledge, on his part, of how the wonderful transformation has been brought about.

This was my most expeditious operation. In the presence of the large medical class of the University of Maryland I have repeatedly completed the entire operation for the correction of squint, including the whole time necessary for the administration of the anæsthetic, in less than sixty seconds, as measured by the stop-watch.

To use the bromide of ethyl efficiently, one must have confidence in himself and also in the safety of the agent which he is administering.

For long operations, or such as I desire to complete slowly, I prefer to administer chloroform, an anæsthetic with which I have had a long, extensive and uninterruptedly satisfactory experience. *Of over 12,000 patients, upon whom I have operated under the narcotic effects of chloroform, I have not lost one.* These patients cover organic disorders of heart, lungs, kidney or visceral disease, in persons of all ages, from the child only a few days old to my oldest chloroform administration, a very old man of ninety-six. Some were strong, while others were very feeble. I never refuse the comforts of an anæsthetic to any person upon whom I have to operate.

Chloroform has always served me so faithfully that I have never had any good reason for transferring my allegiance to sulphuric ether. I now and then use ether, but only at long intervals. Should a patient express any positive objection to chloroform and desire that ether be administered in his case, I always carry out his wishes. When the selection of the anæsthetic is left to me, and it usually is, my preference is decidedly for chloroform. I use chloroform so freely that I buy it literally by the gallon or in seven-pound bottles, many of which I have emptied. Of sulphuric ether I still have a pound bottle, which has been in my possession already five years, with contents not yet consumed. I believe that sulphuric ether is as safe as chloroform, but not more so. I know it to be more disagreeable in its odour and much more unpleasant in its inhalation. I believe that either chloroform or ether, when carefully given in accordance with well-known laws, which should always be observed in the inhalation of anæsthetics, will with few very rare exceptions carry safety in its train. I also believe that if proper care be not taken, trouble may come to both patient and surgeon regardless of the agent selected. Some physicians have much more anxiety while using anæsthetics than others, not because they have a worse class of patients, but because they have never acquired the necessary confidence in the article they use, nor do they feel the necessity, under conviction, of always having and observing fixed rules for their guidance in the use of these powerful agents.

After an experience of thirty years of an active surgical practice, I still hold chloroform to be the best of anæsthetics for tedious operations, provided certain simple rules are adhered to in its administration. I can enumerate them in very few words :

1. I always, *without a single exception*, give a strong drink of whisky, from one to two ounces, to every adult to whom I intend administering chloroform. This is done a few minutes before they get on the operating table. Because I never omit this fundamental law, and in advance sustain the heart against the depressing effect of the anæsthetic, in not one of my 12,000 cases have I ever had to use, in a single instance, a hypodermic of whisky. It is already in the stomach should it be needed and can do no harm if not required.

2. Always loose the neck and chest clothing so as to have no impediment to respiration.

3. Only administer chloroform in the recumbent posture with body perfectly horizontal and head on a low pillow, this pillow is to be removed as the anæsthesia progresses.

4. Give chloroform on a thin towel folded in conical form with open apex so that the vapour, before inhalation, will be freely diluted with atmospheric air. In holding this cone over the face of the patient at some little distance from the nose, place the fingers under the borders of the cone for the double purpose of allowing air to enter freely, and also to prevent the chloroform liquid on the towel from coming in contact with the skin of the patient's face, and thereby avoid its blistering effects.

5. Should loud snoring occur, force up the chin. This manipulation, by straightening the air passage from the nose to the larynx, makes easy breathing. The forcible elevation of the chin is far better in every respect than pulling out the tongue. It is easier of application, more quickly done, requires no instruments and is much more efficient in removing the impediments to respiration.

By always following these five simple rules I have had, so far, both safety and comfort in the administration of chloroform.

(To be continued.)

Dental News

WE are requested to state that the American Dental Society of Europe will hold its eleventh Annual Meeting at Cologne, beginning Tuesday, August 7th, at 10 o'clock.

TRANSACTIONS OF THE STUDENTS' SOCIETY OF THE
DENTAL HOSPITAL OF LONDON.

ORDINARY GENERAL MEETING, HELD JUNE 11TH, 1883.

C. D. DAVIS, Esq., Vice-President, in the Chair.

THE minutes of the previous meeting were read and confirmed.

Messrs. Smith, Pedley, Brown and Hellier having been proposed at the previous meeting, were unanimously elected members of the Society.

The following gentlemen were proposed as members: Messrs W. England, Lloyd, Williams, G. G. Campion and S. Peall. Mr. T. G. Read by Mr. Paterson.

Casual communications were brought forward by Mr. THOMSON, who showed good models of supernumerary teeth.

Mr. STAINER showed a lower molar with a mass of a peculiar horny substance situated between the fangs.

Mr. PATERSON presented models of a supernumerary tooth, and made some remarks relative to the position of the teeth.

The VICE-PRESIDENT then called on Mr. Baldwin to read his paper on "Saliva," which was illustrated by experiment. [Will appear in our next issue.—ED.]

An interesting discussion followed, in which Mr. PEDLEY offered some very thoughtful suggestions concerning the influence of the mind, and its control over the functions of the body.

The discussion was continued by Mr. Paterson, Mr. Mundell and Mr. Stainer, and after some remarks the Vice-President called on Mr. Baldwin to reply.

A vote of thanks was accorded to Mr. Baldwin for his paper, and the meeting was then adjourned; the Vice-President announcing that there would be one held in July, at which Mr. Fox was expected to read a paper.

ON THE BEHAVIOUR OF ARSENIC IN CONTACT WITH
PUTREFYING ORGANIC SUBSTANCES.

By THOMAS STEVENSON, M.D.,

Professor of Toxicology, Guy's Hospital.

It has now for some time been a well established fact that nitrogenous organic substances, *e.g.*, flesh, give rise during putrefaction to the formation of alkaline or basic substances.

Ammonia is the best known of these products. There are, however, other and less known bases or alkaloids, as the organic bases are termed, also produced during decay, *i.e.*, substances formed, as the chemist terms it, on the same type as ammonia. Two chemical bodies are said to be of the same type when they contain the same number of atoms, or groups of atoms (compound radicals), arranged in the same manner. Thus bodies so diverse as water and alcohol are said to belong to the same type, because one of the two atoms of hydrogen contained in the molecule of water in alcohol is replaced by a group of atoms of carbon and hydrogen, known collectively as ethyl; and water and alcohol, regarded in some aspects, have similar chemical properties. Ammonia, abundantly produced during putrefactive decomposition, is itself the type of organic bases (alkaloids), among which are such beneficent substances as quinine, and such destructive bodies as strychnine and aconitine. Trimethylamine, a base which may be regarded as ammonia in which the three atoms in its molecule have been replaced by three groups of the atoms collectively spoken of as methyl. The class of bases formed on the ammonia type, by substitution, are termed *amines*. But not only may the hydrogen atoms of ammonia be thus replaced by such groups of atoms as methyl, but even the fourth atom of the ammonia molecule, nitrogen, may be also replaced by an atom of a different character. Thus by substituting for the nitrogen atom in ammonia and compound ammonias (amines) an atom of arsenic, a series of basic substances is obtained, termed *arsines*. In this way we have the well-known deadly gas arsenuretted hydrogen (arsine *par excellence*), which is a compound of one atom of arsenic with three atoms of hydrogen, just as ammonia is a compound of one atom of nitrogen with three atoms of hydrogen. Numerous arsines can be prepared by the chemist, and they are frightfully poisonous substances.

During the last quarter of a century, attention has been drawn to the occasionally poisonous character of substances obtained by putrefaction. Panum first obtained from these a poison which acted as a ferment. The present writer, in conjunction with Dr. Fagge, also showed that various dead animal substances extracted with alcohol acted as poisons. Bergmann went further, and described, under the name of *sepsine*, an alkaloid generated by putrefaction, which acts as a septic poison producing a kind of blood-poisoning or *pyæmia*.

Still more recently the subject has been developed, chiefly by the labours of Professor Selmi of Bologna; and numerous alkaloidal products of decay have been obtained and made the subject of physiological experiment. To these alkaloidal pro-

ducts of putrefaction and decay the terms "cadaveric alkaloids" or "ptomaines" (πτῶμα, a corpse) have been applied. Some of these bodies are poisonous, whilst others are innoxious. Unfortunately, the descriptions of these bodies given by foreign writers are usually vague, and the doses employed appear to have been indefinite. MM. Gautier and Étard have, nevertheless, endeavoured to elucidate their chemical composition, and have endeavoured, with some success, to show the analogies between the cadaveric alkaloids and the basic substances obtained by acting artificially upon albuminous substances with baryta and the alkalies.

Naturally enough, the well-known analogies existing between the amines and the urosines—bodies, as we have already seen, formed on the same ammonia type—led to the supposition that arsenic when absorbed into the system, and arsenic when present in putrefying animal matters, might give rise to poisonous arsines; and Professor Selmi's researches point to the formation of such bodies. This observer examined the urine of animals whilst they were being poisoned with arsenic, and found in this secretion arsenic, not only in the ordinary form of an arsenite or arsenate, but also as a volatile basic compound of arsenic—an arsine, in fact. Selmi has, moreover, found in the corpses of persons who had died from arsenical poisoning, as well as in anatomical preparations preserved by means of arsenic, poisonous arsenical basis, one of which, though volatile, is stated to have a strychnine-like physiological action.

The existence of these volatile arsines may serve to throw light upon the anomalies attending the use of arsenical wall-papers. It is well known—and has hitherto not received any satisfactory explanation—that some highly arsenical wall-papers have been used without manifest injury to health; whilst others, on the other hand, though containing much less arsenic, have produced distressing results. It may be that in the one case volatile arsenical bases have been formed, and not in the other. The fact that the frequenters of dissecting-rooms, where bodies are injected with preparations of arsenic, do not suffer from arsine-poisoning is, however, adverse to the theory of the formation of these bodies under the influence of putrefaction, unless in very exceptional cases.

Our readers have doubtless heard tales of secret poisoners in the Middle Ages, and how aqua tofana was employed by these persons for their nefarious purposes. Possibly, the formation of the arsenical ptomaines may throw light upon the constitution of this well-nigh fabulous liquid, the potency of which toxicologists of the present age have been prone to doubt. It is a matter of tradition that aqua tofana was pre-

pared by sprinkling white arsenic upon pieces of pork, and collecting the liquid that drained from these; the juice of a kind of toadflax being also added. Now the volatile arsenical ptomain which Selmi has described as acting like strychnine was prepared in this very manner. We can, then, well understand how from arsenic a liquid may have been prepared, highly poisonous, yet totally differing from arsenic itself in the symptoms resulting from its administration. Selmi's discovery needs confirmation and further elucidation; but it may be that the Italian professor has rescued aqua tofana from the category of myths, and that, in a not distant future, toxicologists may have to deal with a whole class of new alkaloids. It need hardly be said how important the ptomaines are from a forensic point of view; but it does not fall within the scope of the present article to point out how they may be recognised under circumstances in which their presence might be mistaken for that of the poisonous natural vegetable alkaloids.—*British Medical Journal*.

MODERN TREATMENT OF BLIND ABSCESS.

By JAMES G. REID, D.D.S.

MUCH information has already been advanced regarding the mode and treatment, by various writers, of abscesses referred to in the heading of this paper. In accepting the numerous suggestions offered, we have been frequently annoyed by finding failures following the unwise council, most of which can only be attributed to the uncertainties of a reliable adaptation of remedies to the disease.

Recent discoveries, however, have furnished us with a remedy *efficient* and *positive* in its action, if used according to the subsequent rules which I will offer; then failures will be at a discount.

Abscesses which have no external communication other than through the root and crown of the tooth are to be considered for treatment in this paper; and this class, heretofore, have caused us frequent, and considerable annoyance.

The suggestions for the treatment of the above named disease, which I shall offer, are based upon sufficient observations and experience to warrant my saying a perfect cure will be established, if followed according to directions.

Preparatory preparations of the root and tooth consist in making a convenient and accessible entrance to the root canal,

removing all the decomposed pulp, and, as a final result, washing out the canal with tepid water, directed with some force from a syringe.

This having been done, apply the rubber dam sufficiently accurate to preclude the possibility of moisture gaining entrance to the canal during the operation.

We are now ready to proceed to the application of the recently discovered remedy, hydrogen dioxide, or oxygenated water, the chemical formulary being $H^2 O^2$.

Having previously wrapped a broach with a sufficient quantity of cotton to act as a piston in the canal, dip the broach into the liquid and carry it well towards the end of the root, and, by rapid pumping, force the liquid into the sac. When this has been accomplished, you will discover a froth oozing from the cavity, which is a characteristic of the remedy when brought in contact with pus, and is an indication that your work is being accomplished satisfactorily.

This should be followed a sufficient number of times at the same sitting, or until the remedy fails to produce the frothy appearance, which is an indication that the pus has been removed entirely; following this, a dressing of the volatile extract of eucalyptus should be introduced into the root on a rope of cotton, to be succeeded by another piece, which should be forced in the cavity tight enough to make a test filling.

The patient should be directed to return the third day, and if, upon examination, there be found any discharge (which can be readily detected on the cotton removed), then repeat the treatment as in the former case, following the same precautions as before, making a tight stopping with cotton satuated in sandarach varnish at the end of the second treatment.

After a lapse of four or five days the root may then be successfully filled with gutta percha or any other preparation that you are in the habit of using, with perfect confidence as to final results.

My experience, so far, with this remedy, has taught me that a complete cure has been established when it fails to produce the frothy appearance, and is an indication to postpone the further use of the medicine.

The treatment should be continued so long as the above results are noticed, which will not be more than three or four times, three applications being sufficient to effect a cure in the number of cases which have come under my observation.

It is interesting, and likewise important to understand the manner in which a cure takes place, by the use of this remedy.

The moment hydrogen dioxide is brought in contact with

pus, inclosed, as it is, in an abscess at the end of a root, it immediately parts with its extra oxygen, seeking the hydrogen (which is present in pus in the form of hydrogen sulphide) in a sufficient quantity to form water ($H^2 O^2$), thus breaking up or diluting the pus in such a manner as to cause it to be readily absorbed and carried off through the system.

The pyogenic sac will be destroyed, as has been shown, by a rapid process of oxydation and absorption, and a perfectly reliable antiseptic (ozone) distributed to every part of the diseased membrane.

In addition to what has already been said, it is, perhaps, advisable to drop a few hints as to the care of the remedy; being a very unstable compound it is important that it be confined in a glass stoppered bottle, wrapped with coloured paper and kept in a cool place, as both heat and light affect it in a slight degree; and more particularly, if left exposed to the air, it is soon rendered inert by the rapid evolution of its oxygen, which destroys its remedial properties.

Therefore, it is necessary when using it, to immediately restop the bottle after each dipping of the broach, or pour from the bottle a sufficient quantity to answer one treatment, considering the residue a loss.—*Southern Dental Journal*.

THE ANTIQUITY OF MAN.

AN interesting discovery, of much importance for geological and archæological science, has recently been made in a coal mine at Bully-Grenay, in the French department of Pas-de-Calais. A new gallery was being pierced, when a cavern was broken into, which discovered the fossil remains of five human beings in a fair state of preservation—a man, two women, and two children composed the group. The man measured about 7 feet, the women 6 feet 6 inches, and 6 feet, the children 4 feet and rather less than this. In addition, some fragments of arms and utensils of petrified wood and of stone, with numerous remains of mammals and fish, were brought to light. A second subterranean chamber enclosed the remains of eleven human bodies of large size, several animals, and a large number of various objects, with some precious stones. The walls of the cave exhibited drawings representing men fighting with gigantic animals. Owing to the presence of carbonic anhydride a third and larger chamber, which appeared to be empty, was not searched. Five of the petrified human remains will be exhibited at the mayoralty at Lens. The remainder of the

bodies which have been brought to the surface are to be conveyed to Lille, there to await a thorough examination by the experts of the Faculté des Sciences. Information has been telegraphed to the representatives of the Académie des Sciences of Paris and to those of the British Museum. If the discovery be a real one, no doubt can be entertained of the value of the find, which would on the face of it seem to show that prehistoric man is anything but a myth.—*Lancet*.

Correspondence.

[We do not hold ourselves responsible for the opinions expressed by our Correspondents.]

CAN RUBBER IN PARTIAL SOLUTION BE USED FOR PACKING?

To the Editor of the "British Journal of Dental Science."

SIR,—The differences in the respective hardness of various Dental rubbers in relation to packing, coupled with the required necessity for using two different kinds, respectively for base and gum, added to the (in my experience where assistants are employed) absolute necessity for opening the flask, at least once (sometimes more), if on the one hand a sufficiency of rubber is to be ensured, or, on the other, an incorrect bite is to be provided against, by the removal, before final closure, of any superfluity, has led me, for some time, to the trying of various experiments, having in view the solution of the two following objects:—1stly, the obtaining of a rubber (not too expensive) which, in colour should answer for both gum and base, and 2ndly, its introduction into the flask in such condition of fluidity, as should effectually ensure the certain finding of its way, under moderate pressure, into every nook and cranny of the piece, in this way securing a more perfect adaptation of piece to model, than perhaps by any other process can be determined. Now as to colour, after extended experiments, I think I may safely say, that, although not quite satisfactory, the orange rubber at 6s. 6d. per pound to be had from Messrs. Mackintosh, Lower Cambridge Street, Manchester, if baked for one hour, is the very best, strongest, and safest rubber which I have been able to get, and is a medium which, for ordinary use, I most strongly recommend to my professional brethren—if baked too long, however, this rubber deepens much in colour. And now as to my hitherto unsuccessful

experiments, for the accomplishment of my second idea. This rubber, besides several others, I slightly softened and made very tenacious and adhesive by the addition of small quantities of bisulphide of carbon, coal tar, naphtha, &c., using a silver spoon to scoop it into the counterpart of my model, then placing model (unclosed) within a small gas oven (which I employ for warming and drying my pieces) for the purpose of evaporating the spirit, then finally closing under pressure my flask, after cutting grooves, &c., with the full certainty that there could be no possible chance of either too much, or which perhaps is still worse, too little rubber, but notwithstanding my greatest care and repeated experiments, my trial pieces all come out, more or less, porous. Will any of my professional brethren who have tried this, or other experiments, tell me how I am to overcome this difficulty, or suggest for mine, and others' good, how this question of easier and safer packing can be accomplished. I may add, that my practice is a good one, commanding fair prices, and not at all of the class conducted by those who offer their products at a price which cannot justify the employment of qualified, or even fairly clever workmen. Personally, I should be delighted if such practical questions as this, along with other trade detail, found bi-monthly discussion in your columns, the letter of "Mechanic" on the duplication of vulcanite plates being one to commend itself to the common-sense experience of all who study the character and properties of the materials with which they have to deal, as opposed to the advancement of theories which, we all know, will not stand investigation.

I am, &c.,

PRACTICE.

AMALGAMS.

To the Editor of the "British Journal of Dental Science."

"L.D.S. Eng.'s" inquiry is rather difficult to reply to as there are so many reliable amalgams in the market, and again, so much depends upon the manner in which they are worked. I have found very different results in manipulating the same material. There cannot be the slightest doubt to any one who has used amalgams extensively and watched the results, that they find the best preparation is the copper amalgams—"Sullivan's," or the improved form of "Stewart's;" but I find this in nearly all cases becomes of a dark colour, sometimes to a black. The shrinkage in these fillings is very slight. The other sorts I have tried with most satisfactory results are "Jamieson's" improved and

"Davis's;" I have used more of the latter, and can speak confidently that if the proper mercury is used in small quantities, the colour remains in nearly all cases the same as when inserted, the directions sent with the fillings and those taught at the Colleges should be strictly carried out. There is undoubtedly a slight shrinkage in any material in which mercury is used. I therefore, for that reason and on account of thermal changes, make my plugs as small as possible. I fill up the cavity generally with "Weston's," leaving only sufficient to hold firmly the metal. These amalgams pack well even under moisture. I have tried nearly all the better class fillings of this kind. I am unable at present to give any experience upon "Davis's" new amalgam. Shall be pleased to answer any further inquiries to "L.D.S. Eng." through this valuable journal.

I am, &c.,

CRANBROOK, L.D.S. Eng.

"DENTIST OR DOCTOR?"

To the Editor of the "British Journal of Dental Science."

SIR,—It is to be hoped, for the credit and honour of the medical profession generally, that not many M.R.C.S.'s of England could boast of such an "experience" as that which your correspondent, signing himself by those initials, has thought proper to disclose in what he conceives to be "the best interests of Dental Science."

The advice he is kind enough to offer as to the course young men should follow in qualifying themselves for the practice of Dentistry, may or may not be good in itself; but what I venture to assert is this, that never was it supported by an example less worthy of imitation, or more deserving of the severest strictures that I doubt not it will call forth from all who have the real interest of the profession at heart. The framers of the Dental Act certainly committed one error, though not the one complained of by your correspondent. His letter proves that they should have made it just as compulsory for an M.R.C.S. or surgeon, "in full practice as such," to hold a *special* qualification, or to be legally registered before practising Dentistry, as the two mechanical assistants who he found it necessary to employ, and the credit of whose skill he boastfully appropriates to himself.

If his argument is worth anything at all, it surely follows that the L.D.S. is not only a "minor," but quite a superfluous title, for all that it signifies is comprehended in the larger and fuller medical or surgical qualification; and it only remains for "M.R.C.S." and the like, to encourage this delusion in

the minds of patients, accompanying it with the cool assumption that "he either does, or ought to know more of their requirements than can possibly be known to any man who has had less opportunities of study!" In other words, that he, a surgeon "in full practice as such," and but *recently* devoting special attention to diseases of the mouth, has had more opportunities for study in that particular branch (for this of course is what it implies) than the man whose whole time has been given to the acquisition of knowledge and manipulative skill pertaining to the art and science of Dentistry! and who holds, perchance, the minor title of L.D.S., in proof of the fact that whatever the public may think, aided by interested advisers, his studies are at any rate recognized by the College of Surgeons as an ample guarantee against quackery and inefficiency.

Evidently as much cannot be said for the "major" title, when holders of the same think it not beneath them to dabble in a speciality with which they have in reality had *few* opportunities of study compared with the legitimate practitioners in that speciality, however they may flatter themselves and try to delude the public to the contrary.

Now, on his own showing, the "minor" licence does "cover the bare practice of this single branch of surgical requirement." What more does he want? Or what more does the public expect of it? It never professed to do more than "cover," or embrace all operations within its own particular sphere. It certainly does not enjoy the questionable privilege of practising in any other sphere than its own, either with or without the qualification to do so; and it can well afford to treat with contempt the sneers—not of the public, but of those who affect a zeal for the public welfare and the future of Dental Science—but whose chief inducement to such a course lies, to quote your correspondent again—in "the certain *profits* they could surely make by adding Dentistry to their *other duties*." (Much the same motive that actuates the despised mechanic, and factory operative). By all means let them make what profits they can, and even "charge more than patients would be asked to pay by lots of those who hold the L.D.S.;" but let them do it honestly and fairly as *Dental Surgeons*, on their own merits, and not as "Surgeons (in full practice as such)," and by disparaging, to their own pecuniary advantage, in the eyes of those they come in contact with, a qualification which after all, *for what it stands*, is worth as much or more than the bigger or more imposing title of M.R.C.S., Eng.

The imaginary case alluded to is quite beside the mark, being that of a surgeon, not in plain practice as such, but practising

Dentistry, which is a different thing altogether, and goes on the assumption of his having received adequate training for that particular speciality which he has adopted, rendering him fit to exercise his calling either with or without the aid of legally registered assistants!

No one supposes for a moment that he exceeds his duty and obligations to his patients if he attends to their requirements, whatever they may be; but he falls considerably short of his obligations to truth and veracity if he entertains or encourages in others the notion that it is in virtue of his M.R.C.S. or L.R.C.S. degree alone that he is better qualified to command their confidence than his less favoured brethren of the L.D.S.

It is my belief that in this matter, as in nature generally, the principle of development through "selection" works in the direction of *specialization* rather than generalization, and that therefore the future of Dentistry, as of any other speciality, will be bright and beneficent only in so far as practitioners learn to mind their own business—employing their superfluous energies, if need be, in the one direction to which it points.

Apologising for the length of this communication,

I am, &c.,

L.D.S. ENG. (*per curriculo.*)

"DENTIST OR DOCTOR?"

To the Editor of the "British Journal of Dental Science."

SIR,—Your correspondent, M.R.C.S., in your last issue (June 15), strikes out a path so entirely novel that I feel almost compelled to beg a little space for a few remarks.

My paper read at Shrewsbury, entitled "Surgeons v. Dentists practising Dentistry," to which M.R.C.S. alludes, was intended to advocate for the Dentist a thorough Dental education, and as a test of this, an examination for the L.D.S. I supported this contention by quoting the opinion of most of the leading Dentists included in and attached to the Dental Reform Committee, and also by giving the decision of the Medical Council of the Royal College of Surgeons. I beg to refer M.R.C.S. to page 555 of your Journal for proof that the College attached importance to the possession of the L.D.S. by teachers, lecturers, and Dental officers to general hospitals.

I showed how the curriculum for the education of the Dentist had been long and earnestly discussed, and deliberately decided upon—how it embraces the whole of

Dental technicalities and special knowledge, with so much of medicine, surgery-materia medica and chemistry, &c., as is useful for a Dentist to acquire. I urged young men to master their own business in accordance with the soundest commercial principles, which is always opposed to the Jack-of-all trades.

Your correspondent says I am all wrong. "The best and truest interest of the future of Dental Science is to make the obtaining of a Dental license *very secondary* to the first securing a full surgical and medical qualification, which enables a man to practise Dentistry either with or without the L.D.S."

Then, sir, your correspondent gives his own experience; he recounts how three years ago, he, a general medical practitioner, devoted special attention to oral disease, and makes the confession, good for his soul, but fatal to his argument—"that *almost at once* I found it necessary to employ two legally registered mechanical assistants for the remaking of badly fitting cases, &c."

Thus M.R.C.S. was obliged to call in Dentists to execute his work.

My old master (*requiescat in pace*), used to say, "Now I want you to carve a set in bone, cast and strike up plates and learn everything; so that you may be able to make a set for Robinson Crusoe, if necessary."

It is well known there are surgeons who cannot operate—they have to call in help. We should scarcely say they were up to the mark; and in this matter of Dental reform and education, we do want Dentists to be up to the mark, and able to do every branch of their own work.

Our correspondent goes on to recommend "medical men to add Dentistry to their other duties for the sake of the work and profits, which are at present entirely lost to them," and infers it is as easy as fitting a truss or bandage. This is a purely commercial view of the case, which one is tempted to hope our professional and so much more qualified brethren will not entertain. If your correspondent means that this commercial aspect is the best and truest interest of Dentistry, I have done.

I am afraid, sir, this too too superior contempt for the manipulative skill some of us have taken many years in acquiring, shows that M.R.C.S. has not yet put his foot on the door-mat of Dentistry. But, sir, can a frog swallow a pond? that is the question. M.R.C.S. is a surgeon in full practice: *i.e.*, sees 50 to 100 patients daily, and spends five or six hours on his rounds.

M.R.C.S. is a specialist in oral surgical diseases, *i.e.*, is con-

sulted in epulis, sarcomatous tumours, ramula, epitheliomas, &c., &c., for miles round.

M.R.C.S. is besieged by applicants for artificial teeth, *i.e.*, his time and that of two assistants, is engaged in taking models, and fitting bites, &c.

Does M.R.C.S. draw the line at stopping? If not, suppose he is in the middle of a large gold filling, his patient having rubber dam applied, &c. Bell rings, and M.R.C.S. is summoned to an urgent labour, which he has promised to attend. Which patient must wait? Can he serve two masters faithfully?

I place him, with his kind permission, on the horns of this dilemma, and ask him to read the opinion of Mr. C. Tomes, M.R.C.S., L.D.S., F.R.S., quoted in my paper, that a surgeon, out of surgery, cannot be an able surgeon. The dilemma is this: As a surgeon practising Dentistry, he can have no *bona fide* surgical practice—he cannot follow cases to their houses and find time to visit them. If he does not, his knowledge of surgery must deteriorate.

His success as the L.D.S. I pass over as unworthy of remark. The gentleman who possess it, even *sine curriculo*, have at least had the courage to have their Dental knowledge tested by competent examiners, which he has not. It is just as improper for a surgeon to practice Dentistry, without a Dental qualification, as it would be for a Dentist to practice general surgery or medicine.

The tone of his letter obliges one to think that a liberal education and attractive letters after his name, are being used by M.R.C.S. to carry out the advice of Polonius to Horatio—"Put money in thy purse"—for we cannot for a moment admit that the Dental work of a surgeon practising Dentistry is superior to that of a Dentist practising the art in which he has been trained.

Put the question thus:—

Place profits out of sight entirely as secondary to the pleasure of successful achievement to a professional man.

Take A and B.

Educate A as a fully-qualified man, with Dentistry as a secondary consideration.

Educate B as a fully-qualified Dentist, according to the curriculum.

Let them surgically and mechanically, without assistance of any kind, treat three patients each before competent judges.

I think, sir, although M.R.C.S. might strongly rave the doctor would win, he would not stake fifty pounds on him.

Dentists, as a rule, do not think doctor's Dentistry will ever set the Thames on fire.

I am, Sir, &c.,

HENRY BLANDY, L.D.S., Ed.

VACANCY.

ST. THOMAS'S HOSPITAL.—Assistant Dental Surgeon. Applications to Mr. Tritton, the Counting House, Westminster Bridge, by July 10th.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 82, Mortimer Street, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
 2. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
 3. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
 4. All communications relative to subscriptions and advertisements are to be addressed to the Publisher, Mr. J. P. Segg, 82, Mortimer Street, Regent Street, London, W.
 5. The Journal will be supplied direct from the office on PREPAYMENT of subscriptions as under:
 Twelve Months (post free) 14s. 0d.
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ANSWERS TO CORRESPONDENTS.

"M.D."—If the name is not on the current Dental Register you may bring the subject under the notice of the British Dental Association by letter.

Communications have been received from Dr. M. Cacciaguerra (Sicily), Dr. R. T. Freeman (London), Messrs. H. T. Scales (Kendal), H. D. Justi (Philadelphia), Edward Tothergill (Newcastle-on-Tyne), P. T. Thomson (Brussels), Colonial Registered Licensed Dentist (Cape), R. C. Goddard (Stockport), James E. Tunford (Lincoln), M.R.C.S., J. S. Dickin, Dental Manufacturing Company, Henry Blandy, L.D.S. (England), M.D., Secretary for American Dental Society of Europe, Berks, T. Hutchinson (Cape Town).

BOOKS AND PAPERS RECEIVED.

"British Medical Journal." "Dental News." "Die Zahnlechnische Reform." "Die Kieferfraymente." "L'Odontologia." "Lancet." "Pharmaceutical Journal." "El Progreso Dental." "Zahnarytheke Mittheliügen." "Progres Dentaire." "Southern Dental Journal." "Medical Times and Gazette." "American Journal of Dental Science." "Dental Cosmos." "Cape Argus." "Gazette des Hopitaux." "Medical Record." "Chemist and Druggist."

NOTICE.—We desire that it may be clearly understood that our pages are open to all for free expression of their views on matters connected with our profession. We only ask for terseness of expression and MODERATION IN TONE.

When otherwise unobjectionable, difference of political or other opinion will never be regarded by the Editor as a disqualification for the admission of any communication to the pages of the BRITISH JOURNAL OF DENTAL SCIENCE.

British Journal of Dental Science.

No. 372.

LONDON, JULY 16, 1883. VOL. XXVI.

ADDRESS DELIVERED AT THE DISTRIBUTION OF
PRIZES TO THE STUDENTS OF THE DENTAL HOSPITAL OF
LONDON MEDICAL SCHOOL, MONDAY, JULY 2ND, 1883.

By CHRISTOPHER HEATH, F.R.C.S.

LADIES AND GENTLEMEN,—I have great pleasure in presiding here to-night, not merely because it is pleasant to see diligence rewarded and to take part in helping the student forward on his way, but because I have the honour of being connected (as Consulting Surgeon) with the hospital where the excellent instruction is given of which we see the fruits to-night, and have always taken great interest in matters connected with the Dental profession. If I may be allowed to intrude a few autobiographical details, I may venture to mention that my grandfather, after serving as a surgeon in the Royal Navy, commenced practice as a Dental Surgeon in this city early in the century, and that my father and three uncles followed his example, which is maintained in the present generation by my brother, and was very nearly so by myself. It is not very surprising then that I should have turned some of my attention to surgical matters relating more or less closely to the art of Dentistry, and thus have been pleasantly brought into close contact with many members of the Dental profession. And what a different profession now from what it was in my grandfather's or my father's time, and even within my own recollection! If we surgeons can go back to the days when the Corporations of the Surgeons and Barbers were united, you need not be offended at anyone tracing your origin to the blacksmith; but now,

when the education for the Licentiate'ship in Dentistry approaches so closely as regards scientific requirements the curriculum demanded for the Membership of the Royal College of Surgeons, it would be affectation in surgeons to regard their Dental brethren as standing on a lower platform than themselves. A most convincing proof of the scientific estimation in which Dental Surgery is now held was given two years ago, when, at the International Medical Congress which met in this city, the very active section of Dental Surgery, under the able presidency of Mr. Saunders, contributed its full quota to the success of the meeting; and still more recently the Council of the Royal College of Surgeons, of which I have the honour to be a member, has conferred upon one of the leaders of the Dental profession the unsought honour of its Fellowship, coupling the name of Mr. John Tomes with that of Professor Huxley, as representative men of science worthy of especial regard.

But the changes in the Dental profession are not confined to its scientific aspects. It is in its social relations that the profession has undergone so marked an alteration. Fifty years ago there was no union, no intercommunication of thought, no interchange of ideas. "Every man for himself" was the order of the day; and the details of practice were regarded as "trade secrets," to be jealously guarded, and on no account made public. Contrast this with the present time, when there are flourishing Odontological Societies, both in London and the provinces; when three Dental journals vie with each other in bringing forward novelties in practice; and when the members of the Dental imitate the example of the medical profession in making their discoveries and inventions known. Surely these are matters for congratulation no less than the higher estimation in which the Dental profession is held by the public at large, thanks to its greatly improved scientific standing. I really am not sure whether I ought to congratulate the Dental profession on its recognition by recent Parliamentary legislation or not. Registration under the Act of 1878 is, I suppose, the first step towards the enforcing of a Dental diploma in the future, and must be compared with the provisions of the Apothecaries' Act of 1815, which recognized everyone in practice at that

date. But let me warn the younger members of the profession against supposing that the mere fact of being registered will bring them practice. The public knows little and cares less about registration and diplomas, but it can appreciate skill, professional knowledge and courteous bearing, and it is upon these that success depends. Let me then urge upon those who are still in *statu pupillari* to acquire the knowledge which is so essential for their after-career while they can do it so easily and pleasantly to themselves. Let me ask them to make the most of the opportunities which the Dental Hospital affords of acquiring the skill which nothing but actual practice can confer, and without which they will not be able to make their way in after-life. We have been to-night rewarding those who have done best in the classes of instruction, and I am sure we all felicitate them upon their success; but success as a student does not always lead to success as a practitioner, and it is often difficult to say why. Is it possible that prize-getters think they have already conquered their little world, and are content with the laurels they have already won and strive after no new ones? If that be so, then prizes are an unmixed evil, which I should be sorry to believe, although I must confess that I have great sympathy with the men who are not successful as students, and yet who so often astonish their teachers later in life by their success as practitioners. Let me then beg those who have *not* been successful to-night to look forward hopefully and to strive manfully to acquire that knowledge which will serve them in the future, even if they are beaten by their more brilliant brethren in the "trial stakes" of student-competition, in which all cannot win though all may acquit themselves with credit.

Lastly, let me say a word to those who are completing their student career to-night, and to many of whom I have already had the pleasure of addressing a few words of congratulation. Let me ask all of you to think nobly of your profession, and so long as you do that there can be no fear of your degrading it. On the contrary, it must be upon you that, in the future, the welfare of your profession will depend, and if you will follow the example of your predecessors and teachers, men like Cartwright, Rogers, Tomes, and Saunders,

who have fought the good fight, of which you inherit the benefit, you will never be ashamed of having been students of the Dental Hospital of London.

ABSTRACT OF A CLINICAL LECTURE BY
DR. MAGITOT ON THE ANOMALIES IN THE ERUPTION
OF THE TEETH IN MAN.

THE anomalies in the eruption of the teeth are, as is well known, usually met with under one of the following forms:—

1. Congenital absence. 2. Early eruption of the milk teeth.
3. Late eruption of the permanent teeth.

The first form, *congenital absence*, may be divided into two varieties, the partial or total absence. The latter form has as yet never been met with, except as a sequel to grave lesions of the maxilla. The former, however, is frequently seen, and occurs as the result of the congenital absence of certain tooth follicles, or of the compression they are subjected to under certain circumstances. As an instance of this last variety may be mentioned the absence of the lower wisdom tooth, which is wanting in many persons. This form of anomaly does not, however, present any practical interest. The same cannot be said of the two other forms, *the early eruption and the tardy eruption*. The appearance of the teeth at, or very shortly after birth, may be accompanied by a series of accidents necessitating medical aid, as in a case previously reported by myself, in which the extraction of two teeth, cut on the second day after birth, was followed by intractable hæmorrhage, and by the death of the child. On the other hand, the eruption of teeth at an advanced age is often attended with grave complications: compression of the dental arch, abscesses, tumours, &c. The two following cases, which occurred recently in my private practice, appear to me to be of sufficient interest to be recorded.

I. *Premature eruption in a new-born child*.—Case: Two lower middle incisors cut at birth; extraction; luecæribile hæmorrhage; death. Mrs. X., primipara, well developed woman, was delivered on the 7th of December, 1882, of a

strong, healthy-looking male child, weighing seven pounds. On the very day of its birth the midwife noticed that the child bore in the centre of the lower gum two small teeth, which were very loose. Without asking the medical attendant's advice she pushed them out with her finger, very easily, she says. Hæmorrhage set in during the night. At first it was quite superficial and very slight. It increased, however, and notwithstanding every means employed to check it: compression, applications of alum, plugging perchloride of iron, and finally the actual cautery. The hæmorrhage continued for six days, when the child died perfectly essanguine.

The first point to be considered in these cases is the interpretation of the premature eruption of the teeth. Have we to deal with early supernumerary teeth or with preternaturally early milk teeth? There can, I think, be no doubt in the matter. These teeth form part of the normal dentition; for if they happen to fall from any cause whatever, their places remain empty during the whole of the first dentition. It is therefore a great mistake to look upon these teeth as superfluous and useless, and upon their removal as attended with no evil results.

I venture to assert again—

1. That no interference of any kind should be allowed in the case of the early eruption of milk teeth.

2. That in most cases these teeth may and do regain a certain degree of firmness, notwithstanding the short size of their roots.

3. That the only serious inconvenience caused by them is the difficulty in nursing and that this may be remedied by the use of artificial teats.

4. That a sufficient reason for abstaining from any surgical interference is the possibility of accidents, and especially of fatal hæmorrhage.

II. *Late eruption in the aged.*—Case: Appearance in a woman, aged 76, of a tumour in the palate, of doubtful nature at first; intense and persistent neuralgia, permanent canine, which had never been cut, appearing in the centre of the tumour; sudden cessation of all symptoms.

Mrs. B., aged 66, informs us, that about ten years ago a

small, hard indolent tumour, appeared in the centre of the roof of the palate. She was wearing at the time an artificial set of teeth, and the swelling being thought to depend upon this, an incision was made into it. The tumour went on increasing, however, and soon gave rise to violent and persistent neuralgic symptoms in the infra and supra orbital and temporal regions. No surgical measures were taken, though the tumour was at this time considered to be a chronic abscess in the vault of the palate. No internal remedies proved of any avail.

Two years ago Mrs. B. noticed that in the centre of the tumour in the palate, which had now increased to the size of a large nut, a sharp, hard point could be felt by the tongue and finger; and also that the neuralgic symptoms had passed off ever since its appearance.

On looking into the mouth it was easy to make out the existence of a partially erupted crown of a canine tooth, projecting about one line and a half beyond the mucous membrane, and lying to the right of the median line, a little more than one inch behind the alveolar border.

Mrs. B. having lost all her teeth more than ten years previously, she was thought to be an example of tertiary dentition; but on carefully cross-examining the patient, it was found that at the time of the completion of her secondary dentition (between eighteen and twenty) a distinct space had remained between two of the teeth on the right side only, the arch being quite complete on the opposite side. We had evidently here to deal then with a permanent canine tooth which had failed to make its appearance at the proper time, and was cut at this advanced period of life.

This case bears out the opinion which I expressed in a former paper, that all these instances of the eruption of teeth at an unusually late age may be explained by the tardy eruption of normal teeth, and that the existence of a third or fourth dentition is anything but proved.

I have but very little to say regarding the practical bearings of this case. No surgical interference appeared justifiable in the present instance, owing *first* to the possible dangers of such a course; *secondly*, to the difficulties attending the removal of a partially erupted palatine tooth; and *lastly*, to the absence of any troubles of any kind.

THE ECONOMICS OF DENTISTRY: AN ATTEMPTED
ESTIMATION OF THE RELATION OF PROFESSIONAL FEES
TO THERAPEUTIC TREATMENT.

By GEORGE CUNNINGHAM, D.M.D., Havard.

(Concluded from p. 603.)

We will now examine the considerations affecting price with reference to the patient. It takes two things to make a perfect operation, a good Dentist and a good patient. Some persons care so little for their teeth that they are not willing to pay a reasonable sum for their preservation, and have no conception of the skill, labour, and patience requisite to insert good and durable fillings. It is the experience of all good operators that it is much easier and more satisfactory to work for patients who have a due consideration of the value of their own teeth and the value of the Dentist's services. It is a necessary part of our professional duty then to educate patients up to as high a standard as possible. I have been told before now by other Dentists that the man who endeavours to educate the public is a fool. I cannot possibly think so. It is not unpractical, however disheartening it may be at times, and in the long run is a policy which will bring its own reward.

There are several practical ways in which we can gauge the appreciation of the patient, and we can do much to educate them to a higher state of things. Ladies very frequently show a sad lack of appreciation of the value of our time by engaging in the details of the toilet in our consulting room; other patients by engaging in idle chat or gossip; others again by writing troublesome letters, necessitating an onerous and unprofitable correspondence; and yet others by failing to write for appointments and clearly stating for what they are coming, and also failing to keep their appointments after making them. Both Dentist and patient may learn a profitable lesson from the humourous Cervantes, for he has not put the following words in the mouth of the immortal Don Quixote, when Sancho Panza informed him that the stones cast by the shepherds had knocked out all his teeth: "Unfortunate that I am, I would rather they had torn off an arm, provided it were not the sword

arm; for, Sancho, you must know that a mouth without grinders is like a mill without a stone, and a diamond is not so precious as a tooth."

The benefit conferred.—This consideration may be taken as affecting price in two ways. (A) Where the operation is likely to be of little benefit to the patient, though the cost in labour and material may have been very great, one is not inclined to charge as much as for one of greater benefit. Such operations should be charged for at the lowest possible rate. On this principle we should charge for dressings, treatment, and white cement fillings, on the lowest possible basis, the value of our time only; this seems fair to both patient and operator, the former feeling the work will be efficiently performed, and the latter not being tempted to "scamp his work." (B) Where the benefit to be derived from a special operation is great, and possibly to be of life-long service, I think we are entitled to a higher rate than can be charged for the former class of operations. This is especially so where the operation is of an special nature, and such as can only be performed by the most highly trained practitioner. Nearly all patients are quite willing to have such operations performed for them, but few are prepared to pay the necessary *quid pro quo*. It is advisable then to prepare the patient beforehand for a payment of a special fee where special treatment is required. One who does not undertake operations of this kind, should be slow to condemn a practitioner who does, for charging a higher fee than he himself would think of doing.

The ability of the patient to pay.—The price or fee which a patient is willing to pay, depends not only on the utility of the Dentist's services to him but also on his *means*. It cannot but be a matter of regret to every right-thinking Dentist that our best services are frequently of so expensive a kind, but until the stopping of the future is discovered we must be content to do the best we can with the materials at our command. The consideration of this factor, the ability to pay, has already been more or less considered under the heading of professional charity, so that we need say no more on this point, except that the mode of treatment must frequently depend upon the patient's means.

A patient whose mouth requires attention but whose means

are limited, will do well to state his position clearly to his Dentist, who must be the best judge as to how a limited sum may be most economically expended. For instance, instead of filling the front teeth with gold, and leaving the molars to rot, because the former are seen while the latter are not—it would be better to spend that same sum in the treatment of all the decayed teeth, even if such treatment can only be of a temporary nature.

The proper time for a patient to state his special position as to his ability to pay, is before the Dentist begins his operations, not after the work has been finished and the account sent in.

The difficulties of introducing a new system, in my opinion, seem greater than they really are. Though it wants thorough conviction and requires great and unusual perseverance, not to say self-sacrifice, on the part of an individual pioneer—all would be easy were such an association as this to adopt some uniform *minimum* tariff. The public must be educated by the Dentists as to Dental matters, and much of the prevailing ignorance, even of the first laws of Dental hygiene lies at the doors of those Dentists who have failed to do their duty. Before we can educate the public we must educate ourselves. Let us therefore consider the *influences of competition*—as by thoroughly recognising the pernicious effects arising therefrom, the resulting difficulties would be quickly overcome.

This very important consideration will have to be looked at from more than one point of view, as it, on closer inquiry, affects the Dentist through his pocket, and the patient indirectly by affecting the quality of the Dental service. Provided that competition were fair and honourable, and could be upon equal terms, no one would rightfully complain of it. We must consider this factor in two ways, first, as it affects price, and secondly as it affects the quality of the operations. Competition as it affects price is almost in favour of the most incompetent Dentist. As far as the quality of the operation is concerned the advantage of competition is on the side of the best operator. In the case of artificial substitutes the patient is in a very fair position to judge of the efficiency of the services rendered. In the case of other operations in the mouth, however, the majority of patients have not the necessary

work, in fact, the more incompetent operator will be more in favour with the patient, because he is less likely to give the patient as much pain or consume as much of his time as the more thorough operator who often "must be cruel only to be kind." The majority of patients are much more able, and much more likely to estimate the pounds, shillings and pence more accurately than they can the character of the operations, and it is only by acquiring a position in a very great degree independent of the influences of competition, as it affects price, that the best operators are able to acquire a remunerative practice. The effects of competition are both good and bad.

Competition between Dentists of different grades.—To indicate this more clearly let us consider a few types, representing the differences existing within the Dentist class as understood by the public. Let us take type (A) as representing the Dentist who, having a due regard for all the usefulness and advantages to be derived from well-made artificial work, also makes a specialty of the saving of the natural teeth, and accordingly who charges higher fees for that class of work. Let us next consider type (B) as representing the best class of ordinary practitioners who have the same proper regard for the mechanical department, but perform only such operations on the natural teeth as the exigences of his time, his patient's urgent requirements, and his limited tariff of fees will permit. Let us assume class (C) as representing the mere mechanical Dentist who may occasionally perform some operation in the mouth, but in a careless and slovenly fashion. The Dentist belonging to the (A) class will be most affected by the competition of the (B) class. While his fees are higher the number of his patients will be necessarily fewer, and it will require a very much higher state of education and intelligence in Dental matters on the part of the patient to understand why his Dentist should charge so much more for his operations than the Dentist with perhaps a larger reputation and a more numerous *clientèle*. But for a high regard for the possibilities of his professional training, his more enlightened duty to his patient, and his ultimate conviction as to his success as a Dentist, he must frequently be tempted to reduce the quality of his operations to that of the (B) class, especially

when he knows that by so doing he would be more likely to achieve an income as large as the operator of the (B) class. The same tooth that would be efficiently filled by class (A) will be poorly stopped by class (B) and would be extracted by class (C). The reason why the income of a Dentist of the (B) class is greater than that of the (A) is because he more especially manipulates his practice so as to provide a large supply of mechanical work, the greater part of which can be done by assistants, and charges a relatively speaking unremunerative sum for his operations on the natural teeth, that he may retain an extensive and constant supply of patients requiring artificial work. The competition that most injuriously affects class (A) is that of class (B), because the outside public have less power of discriminating between these two classes than between others. It is only a matter of time and education, however, and then the class (B) will be affected for good by the competition of class (A), and be compelled for self-preservation to assimilate their practice to that of the higher grade. Both class (A) and (B) will be equally affected by the competition of class (C), the mere mechanical jobber in teeth. This is really not a serious matter as the class (C) will by the natural efflux of time become extinguished by the professional education and training now enforced on all beginning the study of Dentistry. The best means of promoting this happy consummation will be the doing all in our power to educate this class up to our own level, and by teaching them to invest their mechanical work with artistic merit, and by clinics in our association to give them a practical insight into the higher possibilities of operative Dentistry.

There is a serious competition arising from another class which I have not mentioned which affects all three classes, but especially classes (A) and (B). Need I say I refer to the too largely represented class, the advertising Dentist. This is, perhaps the most serious competition with which the profession as a whole has to deal. I think we are too much in the habit of taking it for granted that the work executed by this class is necessarily bad. In general no doubt this is so, but I have reason to know that such is not always the case, as many of the princes of this class not only employ first class mechanical assistants, but by the engaging of skilled operators they

are not dead to the advantages to be obtained from operative Dentistry.

There is no doubt that so far as their glowing and speciously worded advertisements are concerned, they are a complete swindle and fraud, and their pretensions as to cheapness in price are perfectly unwarranted in fact. When they get the opportunity they charge much larger fees than the ordinary Dentist of either the (A) or (B) class; and it is our duty to educate the public that so far as cheapness is concerned they are a gigantic fraud and delusion, and that it is impossible for a Dentist to advertise himself but at the expense and to the detriment of his fellow practitioners. To eradicate the bad and to extend the good effects of competition, we must do our very utmost to create a greater uniformity amongst ourselves, and by promoting the true professional spirit create a still wider and obvious divergence between our ranks and theirs. The necessity of a greater uniformity is at once apparent if we only consider how often it is that a respectable Dentist having advised the necessity of an operation being done in a certain way, is obliged to do it after another fashion, which if left to himself he would not do, simply because he knows that the patient has only to go to a neighbouring, and possibly equally respectable practitioner to have it done, as he, the patient, thinks fit. Greater uniformity amongst ourselves would result in greater independence in matters of professional advice which would be advantageous alike to the morality of the Dentist, and to the physical well-being of the patient.

All right-minded men recognise the demands of charity, but as members of a profession whose duty is the relief of suffering, and the preservation of health, the obligations of charity have a special claim upon us as such. It is only in a professional sense then that I propose to discuss this point. We are entitled to expect that a Dentist's compensation should be such as to give him a competence, as well as a provision against old age or infirmity, and still leave some margin of time for charitable work. It is well in every way that the whole, or at any rate the greater part of such professional charity should be bestowed in a Dental department of a medical hospital or dispensary. Such, however, is not always

knowledge to discriminate sufficiently between good and bad possible. We have found it best to meet such occasional claims as turn up in private practice by charging a nominal, or as I prefer to term it a provident fee. Work which cost the recipient nothing is usually very lightly esteemed. By charging a provident fee, however, and occasionally allowing the patient to pay up in instalments we have frequently done work which has been gratifying to both patient and operator. There are great possibilities of abuse in this matter of charity—abuses not so much affecting the practitioner himself, as perhaps his poorer brethren. Let us take for consideration a few social types to facilitate the consideration of this matter. We may take the banker, or the landed squire (class A) as representing the class who can best afford to pay for our services; (class B) the poor clergyman as representing the intermediate type; and (class C) the shop-girl or clerk as representing the lowest grade of those who would like to avail themselves of our professional assistance. In towns where there are several Dentists the best practice will be mostly made up of the A class patients, while others will have to content themselves wholly with classes B and C. The class B patient will naturally prefer to go to the high class Dentist. If this practitioner operates for this class of patient at a nominal fee, or gratuitously, he may be really doing himself a very good turn by the indirect advantages that may almost certainly arise from this in the way of recommendations to class A patients, with whom he may associate. But is he not at the same time doing an injustice to his brother practitioners who are obliged to content themselves with the less remunerative *clientèle*? Would it not be more generous and more truly charitable to refer such patients to his less successful professional brother? Would not the patient be likely to receive even more efficient treatment were he to go to the Dentist who would be receiving full remuneration for his services? It must be remembered too that the best Dentist is not necessarily he who charges most though usually this is the case. A Dentist who has a reputation yet to make, and consequently has more leisure, if he is of the true grit, will have the greater incentive to do good work. With regard to class C the difficulty does not so often occur,

as they are less likely to go to the more highly paid practitioners, but the same thing is relatively true of them.

There is another class who have presumably a special claim upon our services, I allude to the medical profession. In the following remarks I make no allusions whatever to services rendered to professional friends. Many practitioners make a point of working gratuitously for medical men, and often their families as well. Why do they do so? On grounds of charity—no! From motives of policy—yes! Both operator and patient would scorn the idea of charity. I do not hesitate to say that such a practice is pernicious in the extreme and humiliating both to Dental and medical practitioner.

For my own part I prefer to pay for what medical services I may require, and I am convinced that it would be to the advantage of the medical practitioner to pay for what Dental services he may require. In mechanical Dentistry it is possible for the Dentist to render good and efficient services under these conditions, but if there is extensive operative work to be done in the mouth of a medical man, he will, indeed, be a remarkable Dentist who can find the time and inclination to do every thing in his best manner for his medical patient. It places the medical practitioner under the obligation of recommending his Dentist, whether his work is satisfactory or not, it also operates to the disadvantage of the patient in this way. Where the Dentist refuses to accept payment there must be a natural disinclination to return for further aid. I have known doctors leave Dentists with the best practices because of that very fact. Both for our own sake and theirs, let us try and educate those members of the medical profession to this way of thinking. I have known Dentists make a point of going to a good operative Dentist and paying for the services they require, and not appreciating the less, on that account, either the work or the operator.

In conclusion, a few of the elements out of which the true theory of dental fees must be constructed have been presented for your consideration, chiefly with a view to this matter being thoroughly discussed. It may seem strange that there should be any possible relation between professional fees and therapeutic treatment; but being thoroughly convinced that a very important relation between them does

exist, I have made an exhaustive study of the various factors which regulate, or should regulate fees to prove my point, which should be obvious. Time will not permit me to further discuss the subject, and I can only recommend it to your earnest consideration. I am convinced that a due reform in this matter by holding out a greater reward for good work will promote that thoroughness of professional treatment, which, as our President states, and as we all know, is so sadly wanting in our midst. If I have extenuated nothing, I have set down nought in malice, and my motive in penning this paper is simply to promote the happy day when we may honestly claim that operative Dentistry in this country is on the same plane, and of the same excellence as that practised on the other side of the Atlantic, resulting as it will, not only in increased advantage and consideration to the Dentists, both individually and collectively; but, also, in what is more important still, the greater welfare of our patients.

HEAVY VERDICT AGAINST A DENTIST.

A VERDICT was recently brought into court, before Judge Van Brunt, in the Court of Common Pleas, in the suit of Mrs. Jessie M. Izard against John Westley, a dentist. Mrs. Izard brought an action to recover 5,000 dols. from Mr. Westley. She alleged that in March, 1882, she went to his office for the purpose of having a tooth extracted. She took her position in the dentist's chair and gas was administered to her. Dr. Westley attempted to draw the tooth, which broke; he again tried, and in the struggle, as she declares, knocked the "plug," down her throat. He struck her on the back, and placed his fingers down her throat and brought up the "plug," and threw it away. Mrs. Izard declared that the dentist broke her jaw, and that she was confined to her room for one month. Dr. Westley denied these allegations, and declared that if Mrs. Izard had taken proper care of her jaw she would not have suffered. The jury brought in a verdict in favour of Mrs. Izard for 1,200 dols., and an extra allowance of five per cent., was granted. A motion for a new trial upon the ground of excessive damages was denied.—*American Dental News.*

SALIVA.*

BY HARRY BALDWIN.

MR. VICE-PRESIDENT AND GENTLEMEN,—We must be interested, all of us, in Saliva, notably because we come in contact with it daily in the discharge of our duties. It is well for us to know as much about it as possible, not only for general purposes, but also, in the case of the majority of us who are students, for a very particular purpose, viz., of satisfying the examiners, should they think well to question us on this subject, at the College. No paper, so far as I can make out, has ever been read on this subject before the Society.

The points I wish to touch on are—

1. Definition of saliva, and description of the glands by which it is secreted.
2. Its physical properties and physical uses.
3. Its chemical composition.
4. Its chemical properties and chemical uses.
5. Circumstances governing its secretion.
6. Manner in which it is secreted.
7. An acid reaction of saliva in health.
8. Effects of disordered states of body upon it.
9. Salivation.
10. Effects on the teeth.

N.B.—*The consideration of tartar I leave out altogether*, as we have lately heard a paper on that subject.

1. DEFINITION OF SALIVA, AND DESCRIPTION OF THE GLANDS BY WHICH IT IS SECRETED.

Saliva is the secretion of the salivary glands. The salivary glands consist of three pairs of large ones and numerous small ones.

The pair of *parotid glands* is the largest of the three.

The *submaxillary glands* are intermediate in size and the *sublingual glands* are the smallest.

Each *parotid* (so called from its proximity to the ear) is situated at the back part of the cheek in front of and

* Read before the Students' Society of the Dental Hospital of London, June 11th, 1883.

below the lower part of the ear. The zygoma limits it above and the angle of the jaw below. It extends in from the ear to about one-third of the distance between the ear and the corner of the mouth. It has two processes, given off from the body of the gland, one of these runs deeply into the neck behind the styloid and mastoid processes of the temporal bone and beneath the sterno-mastoid muscle. The other process projects into the back part of the glenoid fossa. The highest part of the gland, just below the zygoma, often exists as a separate lobe and is called "*socia parotidis*." The duct of the parotid gland, *Steno's duct*, leaves the gland by its front border and opens into the mouth opposite the second molar tooth of the upper jaw. *Steno's duct* is about $2\frac{1}{2}$ inches long. It is placed a finger's breadth below the zygoma. Its course is nearly horizontal. In its passage from the gland to the mouth, it first runs along the external surface of the masseter muscle, then it pierces the buccinator muscle, after which only the mucous membrane separates it from the mouth. It pierces the mucous membrane obliquely and its orifice in the mouth is on the summit of a small papilla. Near its commencement it receives a tributary from the *socia parotidis*. The canal of the duct is about the size of a crow-quill. The parotid gland, when dissected out, weighs from $\frac{1}{2}$ to 1 oz. Some large arteries, veins and nerves, pass through it. The arteries which, in part, pass through it, are the external carotid, the temporal, the internal maxillary, the transverse facial and the posterior auricular. The veins are a trunk formed by the junction of the temporal and internal maxillary, and a branch which connects this trunk with the internal jugular vein. The facial nerve (portio dura of the seventh) immediately after leaving the brain, through the stylo-mastoid foramen, enters the parotid gland and branches out in its substance, in a manner which has given it the name, at this point, of "*pes anserina*," or goose's foot. These branches emerge at the front border of the gland. The great auricular nerve also pierces the gland and joins the facial in its substance. The internal carotid artery and internal jugular vein do not pierce the gland but lie close to its deep surface. There is nothing covering in the gland but skin and fascia, and one or two lymphatic glands. One or two lymphatic glands are, by the way, imbedded in its

substance. The arteries which supply the parotid gland with blood are branches from the external carotid. The nerves supplying it are derived from five sources, viz., branches from the carotid plexus of the sympathetic, branches from the facial nerve, the superficial temporal, the auriculo-temporal and the great auricular nerves.

The submaxillary gland is situated on the inner side of and below the lower jaw. A depression is to be seen on the lower part of the inner surface of the body of the lower jaw-bone, where the submaxillary gland has indented it. This gland is seen in the dissection of the anterior triangle of the neck at its highest part. It lies, on the one hand, between the skin and skin-muscle (*platysma myoides*) and deep fascia; and on the other hand, three muscles of the mouth, viz., mylohyoid, hyoglossus, and styloglossus muscles. A portion of the gland passes beneath the posterior border of the mylohyoid muscle. Its posterior and upper border is grooved by the facial artery. The duct of the submaxillary gland, *Wharton's duct*, is about 2 in. long, and runs nearly horizontally between the muscles under the tongue. It opens into the mouth on the summit of a small papilla, which papilla has a dark coloured dot in its centre, and is situated under the free part of the tongue at the side of the frænum or membrane which limits the movements of the tongue. The weight of each of the submaxillary glands is about quarter of an ounce. They receive their blood supply from the facial and lingual arteries, and their nerve supply from three sources, viz., the submaxillary ganglion, the mylohyoid branch of the inferior dental nerve, and the cervical sympathetic.

The *sublingual glands* are situated under the free part of the tongue, just beneath the mucous membrane covering the floor of the mouth. Their shape is something like an almond. They touch each other internally, and touch the lower jaw in front and externally, hollowing it slightly as the submaxillary glands do. Instead of having one duct, as the other salivary glands, the sublingual glands have from eight to twenty small ducts each, called *ducts of Rivini* (*ductus Riviniani*), which are very short, and open into the mouth on an eminence of mucous membrane at the side of the frænum linguæ; the eminences being caused by the projection of the glands them-

selves. One or more of the small ducts from the sublingual gland form a tube which opens into Wharton's duct; and this communicating tube is called the *duct of Bartholine*. The sublingual glands receive their blood supply from the sub-mental and sub-lingual arteries, and their nerve supply from the lingual. These glands weigh about one drachm each.

Besides these three pairs of large glands, there are numerous small ones, thickly placed in the mucous membrane on the internal surfaces of the lips, cheeks, soft palate, back half of hard palate, and root of tongue.

The structure of all the salivary glands is similar. The small glands last mentioned consist merely of a duct, which, as it progresses inwards becomes branched and convoluted, the terminal tubules being called *acini*. Between the acini are networks of capillaries and lymphatic spaces, also nerves. The acini are lined and very nearly filled with gland cells, which are the active agents in secretion. The duct is lined with columnar epithelium which is continuous with the secreting cells on the one hand, and with the epithelium on the surface of the mucous membrane on the other hand. The larger salivary glands consist merely of a great many parts, just like these small glands, aggregated together, but numbers of the ducts from the individual parts, now called lobules, join together and form a common duct, the duct of a lobe. The ducts of the different lobes join together and finally emerge from the gland as one large duct, as Steno's or Wharton's, excepting in the case of the sublingual gland, which has numerous small ducts. The ducts of the parotid and sub-maxillary glands are thick and dense, consisting of an external fibrous coat with unstriped muscular fibres and an internal coat of mucous membrane, lined by columnar epithelium. The lobules and lobes of the glands are held together by connective tissue, in which ramify arteries, nerves, and lymphatics; and in which also are many nerve ganglion cells.

2. PHYSICAL PROPERTIES AND PHYSICAL USES.

As found in the mouth, saliva is a mixture of the secretions of the various salivary glands, together with impurities—such as the *débris* of food, epithelium-scales, cryptogamic vegetable organisms, the so-called salivary corpuscles, bac-

teria, &c. As such it is a viscid fluid, frothy, though containing air bubbles. If received into a glass vessel it is seen to be nearly colourless, but slightly opalescent. What little colour it has is described as a pale bluish grey tint. If allowed to stand, a white sediment of the various impurities settles to the bottom; if not disturbed for two or three days, a thin, white film of carbonate of lime makes its appearance on its surface.

The pure saliva *from the parotid* is not viscid, but clear and watery. On standing, a precipitate of carbonate of lime is formed, which renders it turbid. This is due to an escape of carbonic acid gas.

Submaxillary saliva is a thick, viscid fluid, containing mucin, with small masses of organic matter.

Sublingual saliva is the thickest and most viscid of the three kinds; the sublingual glands being stated to secrete pure mucus by some authorities.

The physical uses of mixed saliva are by far its most important uses. In the first place it keeps the mouth moist. The movements of the tongue in speaking cannot be perfectly carried out with a dry mouth. It dissolves sapid substances in the mouth and so makes them capable of exciting the nerve of taste. By mixing with food during mastication it makes it into a soft mass which can be swallowed. It mixes with food much more readily than water does, just as, and we must all have noticed this, it is soaked up by amadou much more readily than water is. The watery secretion of the parotid glands is what is chiefly mixed, or ground up, with the food during mastication, and the thick secretion of the submaxillary, palatine and tonsillar glands, is spread more over the surface of the mass, enabling it easily to slip through the fauces and down the œsophagus. The average measure of saliva secreted by an adult, is from two to four pints, most of this gets absorbed in the stomach and resecreted.

3. CHEMICAL COMPOSITION.

Mixed saliva is composed chiefly of water; its solids only amounting to about half per cent. The solids consist of organic bodies and salts: both are present in about equal quantity, the organic slightly preponderating. The organic constituents are *mucin* with *globulin* and *serum-albumin*, also *ptyalin*. The

salts are the following—phosphates and sulphates of potassium, sodium, calcium and magnesium, chlorides of sodium and potassium, and sometimes sulphocyanide of potassium.

Mucin can be demonstrated in saliva by adding acetic acid gradually and stirring with a glass rod; this causes it to become more and more tenacious and finally the mucin separates in white stringy flakes; these must now be washed in water and acetic acid, then, when inserted in pure acetic acid the flakes will be seen to shrink together instead of swelling and dissolving as albuminous bodies do.

To show the presence of *globulin*, pass carbonic acid gas for some time through the saliva which has been largely diluted with water, and a very fine flocculent precipitate of globulin will be formed, which tends to disappear when the liquid is shaken up with air.

The *albumin* can be shown to be present by taking saliva in a test tube and strongly acidifying it with nitric acid; this produces a turbidity, but no precipitate is formed. On boiling it becomes clearer, the colour changes to yellow, and the addition of ammonia turns the yellow to orange-red. Another test for albumin is this—add to saliva a mixture of acetic acid and ferrocyanide of potassium, and by this means a precipitate is produced.

The *ptyalin* of *Berzelius* is separated from saliva as follows,—first add phosphoric acid to the saliva, then milk of lime. A precipitate of phosphate of lime is thus formed, which carries down the ptyalin. Allow the precipitate to subside and separate it by filtration. Cover the residue with a small amount of water, not exceeding the amount of saliva originally employed. Stir well and filter again. The watery filtrate thus obtained contains the ptyalin in solution. Now precipitate the ptyalin by adding an excess of alcohol. Allow the precipitate to settle, pour off the liquid, and lastly dry it over sulphuric acid.

The presence of the various salts in saliva may be demonstrated as follows :—*Carbonates*. Put a drop of saliva on an object glass, and cover with a cover glass; now add a drop of acetic acid, and watch. Bubbles of carbonic acid gas will be seen to form underneath the cover glass. *Chlorides* Acidulate the saliva strongly with nitric acid, then add nitrate of silver. A white precipitate is at once formed which disappears imme-

diately on addition of ammonia. *Sulphates*. Add barium chloride, this produces a white precipitate which is not soluble in acids when the liquid is boiled. *Potassium*. Dip a piece of clean platinum wire into saliva, and allow the saliva to evaporate. Then heat the wire in the flame of a Bunsen burner. Look at the flame through a piece of blue glass, and it will appear of a violet colour. *Sodium*. Heat on a clean platinum wire as if testing for potassium; but discard the blue glass and the flame is coloured yellow. *Calcium*. Add to the saliva ammonium oxalate. This produces a white precipitate of oxalate of calcium. *Magnesium*. First add to the saliva ammonium chloride and ammonia, then add sodium phosphate, and a white precipitate of ammoniaco-magnesium phosphate is produced. To show the presence of *potassium sulpho-cyanide* in saliva, when not absent, place a little saliva in a porcelain evaporating dish, and add to it a drop of perchloride of iron, so dilute as to be nearly colourless. Now stir with a glass rod and a reddish yellow colour appears. If the colour is not developed evaporate another portion of saliva to one-third of its bulk and apply the test again. This will not fail if the salt be present. When the reddish colour has made its appearance take one portion and add hydrochloric acid to it. This does not remove the colour. To another portion add corrosive sublimate and the colour still remains. (Acetic acid gives with perchloride of iron a red colour similar to the one described; but this disappears on the addition of hydrochloric acid. Meconic acid also gives with perchloride of iron a red precipitate, but this disappears on the addition of corrosive sublimate.) The red colour produced on addition of perchloride of iron to saliva has been supposed, by different observers, to be due to the presence of nicotin from tobacco-smoke, acetates, decomposed matter from carious teeth, to hydrophobia, &c., but it is now generally agreed that it arises from sulphocyanide of potassium. Sulphocyanide of potassium is a rather unaccountable sort of salt to be eliminated by a salivary gland. Its use in saliva is disputed, the most generally accepted notion being that it prevents, in proportion to the amount present, the growth of cryptogamous vegetable organisms in the mouth, fauces, &c.

(To be continued.)

British Journal of Dental Science.

LONDON, JULY 16, 1883.

IN his brilliant address (which we publish elsewhere in our current number), delivered to the students of the Dental Hospital of London, at the recent distribution of prizes, Mr. Christopher Heath foreshadows a bright and prosperous future for our profession.

It is, indeed, a sign of the steady upward progress we are making when so eminent an authority says, "it would be affectation in surgeons to regard their Dental brethren as standing on a lower platform than themselves."

We have already stated as our conviction, that if the members of the Dental profession wish to acquire the status enjoyed by their medical brethren, they must reach it not by proclaiming their near relationship to the latter, but by increasing and relying upon their own intrinsic and individual merits; and this will be best accomplished by maintaining a high educational standard, such as is required for the licentiateship in Dental Surgery.

Mr. Heath next spoke of the marked alteration—in its social aspect—which the profession has undergone of late years, in the increased intercommunication, and interchange of thought and ideas, by means of the Odontological and other Societies and Associations, and by the medium of the Dental Journals. We believe with him that the destruction of the old system of "trade secrets," and the publication of Dental inventions and discoveries have been the lever which has elevated Dentistry from the position of a trade to the

dignity of a profession ; and has not only increased its scientific standing, but in addition has raised it in the estimation of the public at large.

We believe further, that, now Dentistry confers upon its members a recognized professional status, its ranks will be reinforced more frequently from classes whose social position kept them aloof so long as there was a suspicion that the stigma of trade was attached to it. On the whole the outlook for the profession is satisfactory, and with the passing of the new Act, our consolidation as an important and recognized branch of the medical profession is assured.

In conclusion we must congratulate Mr. Heath for the expression of such generous sentiments as are embodied in his address ; and as we know that the same feelings are entertained by many of the most eminent members of the medical profession we may augur that the old barrier of exclusiveness, which has so long existed between the two branches of the profession, is about to be entirely removed, and in its stead an harmonious understanding will spring up, which will increase *pari passu* with the growth of knowledge and the progress of science.

THE *British Medical Journal* announces " that the honour of knighthood has been offered to Mr. Edwin Saunders, F.R.C.S., for many years Dentist to the Royal Family, and a liberal benefactor of the public institutions connected with his profession." Viewed from every position this gracious act cannot but be deemed highly satisfactory. In Mr. Edwin Saunders the profession has had a sound adviser ; and we cannot say that anything that this gentleman has proposed and acted upon has ever proved a failure.

When the lease of the premises of the Dental Hospital of London, 32, Soho Square, fell through, Mr. Edwin Saunders

came forward with a liberal hand, and headed the list of subscriptions for purchasing the lease and fitting up a building in a manner worthy of the profession as a Dental School, and besides many other grants from his purse he has within the last few months accepted the sum of fifteen hundred pounds from the Trustees of the London Dental Hospital, and handed over to them in exchange, the tower which completes this handsome building, and which originally cost him three thousand pounds to construct. It would be superfluous to enter upon all the minor acts of charity and liberality which this gentleman has shown towards his professional brethren, for his name is too familiar to require our pen to specially point them out; sufficient to say that Mr. Edwin Saunders has been "a liberal benefactor of the public institutions connected with his profession," and the recognition of that by his sovereign is not without warrant.

When Mr. Saunders succeeded Mr. Naysmith as Dental Surgeon to Her Majesty, no one doubted that he would hold that position for many years; he was a master of his art, and his extremely courteous manner was sure to win the favour of his august patient. Apart from the personal gratification which Mr. Saunders derives, how far can we estimate the value of such an honour as offered to a member of our profession. Mr. Saunders will willingly allow that it is not for his researches in science that he is raised from the plebeian grade, for were such a merit needed he would retire in favour of his esteemed friend and co-worker, Mr. John Tomes. His services as Dental Surgeon and his benevolence have won for him his title, and there is not a member of the profession who will not sincerely congratulate him.

When it is remembered that the Dental specialists have in their ranks men who possess the highest scientific honours, the highest medical and surgical qualifications, graduates of our universities, and lastly, one who has received a title at the

hands of his sovereign for his services as a specialist, it will be difficult to imagine that anyone will be bold enough to doubt the opinion of "only a Dental Surgeon." We may now surely lay claim to the same social status as Surgery, Art, and the Law; but, in satisfying ourselves as to our respectability, let it not be forgotten that it will be the duty of every man to uphold and increase the noble work of such venerable heroes, Mr. Saunders and Mr. Tomes.

Manipulative Miscellany.

All instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month, they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits, and without any intention or wish to pit one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

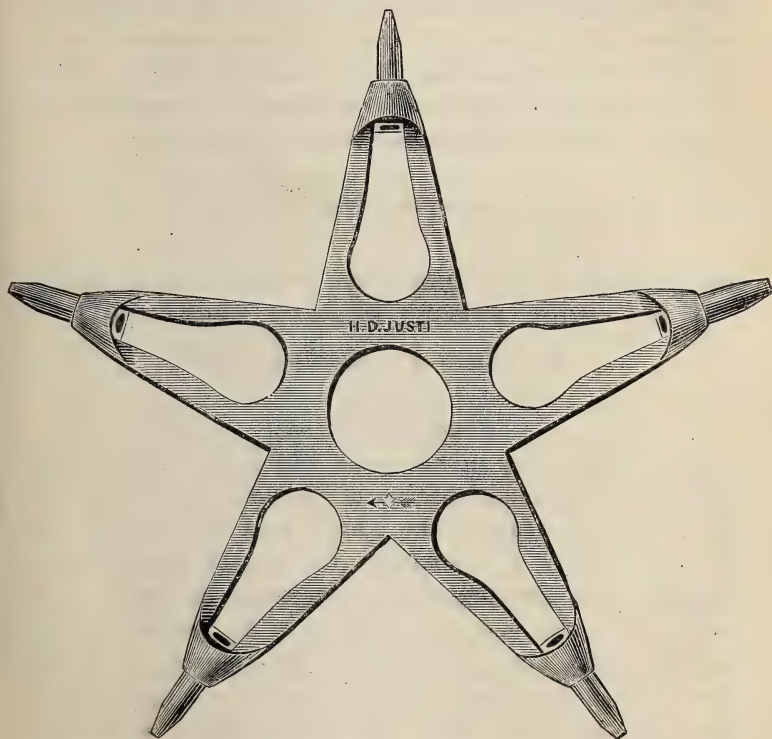
A NEW PHOSPHATE CEMENT.

MESSRS. C. ASH & SONS have introduced another Filling under the above title, which they have manufactured in five colours, viz., pale yellow, pale grey, light yellowish grey, dark yellowish grey and greenish grey. The fluid for mixing they state will not crystallize, hence it is always ready for use. Our experience with it is so recent that we can only say that it works satisfactorily, giving convenient time before setting, and forms a dense hard plug; the colours also are well adapted for matching and may be mixed if thought desirable. It has proved non-irritant in the few cases we have tried, and seems a good non-conductor of thermal changes. Of its durability of course as yet there is no opportunity of judging, but

it appears likely to make as reliable a plug as any material of a similar nature.

STAR RUBBER DAM PUNCH.

MR. JUSTIS' new Rubber Dam Punch, as illustrated below, has just been sent to us, and we may state, without further explanation, that the care with which the cutting points have



been prepared enables each hole to be made with great accuracy and free from jagged edges, a feature to be admired in such an instrument.

NEW MOUTH GAG.

MR. EDWARD FOTHERGILL, L.D.S., has designed a new gag for use outside the mouth; which may be described as

somewhat in the form of the letter C., having little trays swiveled to the extremities on which the teeth are to rest, and a hinge in the centre of the semi-circle enabling the little trays to approach each other until they touch; the back of the semicircle is grooved and carries a small spiral spring attached at its upper and lower extremities, and always in a state of tension. This spring tends to keep the gag always open, and so follows any opening of the mouth, whilst a perpendicular support hinged to one arm of the semicircle and passing through a slot in the other, which carries a milled headed screw, sets the gag at any required height. When no longer required for use, by reversing the screw nut, the gag can be closed and removed without difficulty.

BROMIDE OF ETHYL, THE MOST PERFECT ANÆSTHETIC FOR SHORT, PAINFUL SURGICAL OPERATIONS.

BY JULIAN J. CHISHOLM, M.D.

(Concluded from p. 622.)

Possibly one very strong reason why I have been so successful in the administration of chloroform is, that as a specialist in eye surgery the inhaler must be removed from the nose before I commence the surgical manipulations. Besides, while operating, I have constantly in view both the colour of the face and the respiration of the patient, which I consider even more important for the surgeon to observe than to feel the pulse. When surgeons are operating on distant parts of the body and cannot watch the work of the administrator of chloroform, accidents are more apt to happen.

In the inhalation of the bromide of ethyl all of these rules laid down for the establishment of chloroform narcosis are not necessary, and some of them cannot be followed out.

The recumbent posture I consider essential for the safe administration of any anæsthetic, whether it be chloroform, ether or ethyl, hence these agents are not safe remedies at the hands of dentists, who place their patients in a sitting

posture. Preparatory to the inhalation of the bromide of ethyl I have not found it necessary to give whisky. The only precaution I take is to loose the neck clothing and have the patient lie down with the head only slightly elevated.

My experiments have taught me that the mode of administering the ethyl should differ totally from that used in giving chloroform.

Instead of a chloroform vapour freely diluted with atmospheric air, a saturated ethyl vapour must be enhaled, to the exclusion of atmospheric air, in order to obtain speedy and effectual narcosis.

In my early experiments with this new agent I had not yet discovered this fundamental principle, and hence did not obtain good results. I voted bromide of ethyl a failure, because in common with other experimenters, I was too timid, or rather I should say too ignorant of its peculiarities, to push the ethyl vapour in the concentrated form, which I have since found necessary to obtain good results. By my present method of administering it, I can obtain perfect ethylization in patients in from twenty to sixty seconds, and have no after consequences of nausea or dullness of feeling.

The best inhaler for the giving of the bromide of ethyl is a thick towel folded into the form of a small cone with closed apex. Between one of the folds of the towel I place a sheet of paper, which makes the cone nearly air-tight. The base of the cone must be wide enough to enclose both mouth and nose. The soft material of which the inhaler is made enables the rim to be kept firmly in contact with the face, so as to exclude air from entering. I always instruct the patient how to make long inspirations, and inform him that he must do this, notwithstanding the fact that he will feel somewhat stifled. I also try to give him confidence by assuring him that a very few inspirations will put him to sleep. Usually I make him go through the process of strong respiratory movements in advance, so that he will know exactly how to proceed. Into this towel cone I pour about one drachm of the bromide of ethyl and immediately invert the inhaler over the nose and mouth of the patient, holding its edge down firmly over the face. There is no fear of creating asphyxia, as all air can not be excluded, and the

height of the cone makes a considerable air-chamber into which the patient breathes.

Children usually struggle to escape from the apparatus. *The cone, however, must not be removed from the face for an instant until anæsthesia is produced.* At first, some patients will resist the breathing of the vapour, but there is no fear that they will not catch their breath in time. Should children cry, it only insures inspiratory efforts, which the more surely and quickly will bring about the introduction of the vapour into the lungs. As a rule, a dozen full inspirations are all that are needed to produce deep narcosis. I recognise this desirable condition by a stoppage of all struggling. I have had deep sleep brought on by the sixth inspiration, when complete relaxation ensues, with quiet breathing, and an absence of reflex irritation should the conjunctiva be touched. The patient retains the usual healthy colour of lips and cheeks as if in ordinary sleep, and the pulse becomes slower and stronger as the narcosis becomes profound. Thirty seconds, as a rule, is sufficient to bring about this desirable condition, and have the patient ready for operation.

I have not found this anæsthetic sleep last more than two or three minutes, often not so long.

Usually the patients awake suddenly and as completely as they would do from ordinary sleep. They are able to get down from the operating table without assistance and walk off without staggering, and with brain clear to answer correctly any question; in fact, quite themselves.

It took me some time to acquire such confidence in the safety of the remedy, as to apply it in the concentrated form needful to obtain its fullest benefits. To the uninitiated it looks like cruel work to keep the cone of a saturated ethylised vapour over the face of a struggling patient. *I am convinced, however, that in no other way can quick, complete and safe anæsthesia be obtained by it.* Fortunately the struggling is very soon over, and quiet sleep speedily ensues.

My experience with the bromide of ethyl will now exceed 400 cases, of which upwards of 300 are within the past year. I am beginning to be familiar with its administration and its effects. *I now know what is to be obtained by it, and what not to expect from it.* I give it without hesitation, in

any case, to avoid painful manipulation. I have used it as often as six times a day, and I administer it, on an average, certainly once every day. In the last week I have given it fifteen times. For office use I find it invaluable, on account of its promptness, efficiency, evanescent nature of the anæsthesia induced, the absence of nausea, and the perfect comfort with which patients operated upon can leave my office within a few minutes after the ethylization. Its use in my every-day experience does not interfere in the routine of office practice, nor occupy more time than I give to any ordinary office consultation, a very important desideratum to those who have restless patients awaiting their turn in the reception-room.

Those who will use it by a single inhalation, to produce a short, deep sleep, and not resort to a mal-administration of this very valuable, powerful agent for a continued anæsthesia, which it is incapable of sustaining in safety and in comfort, will become as enthusiastic as I am over its brilliant results. They will in time learn to consider it, as I do, the most perfect of anæsthetic agents for quick, painful surgical work. It can never take the place of chloroform or sulphuric ether where any heavy operations are to be done. These well-known and tried anæsthetics must continue in favour for all tedious operations, and will be used in minor surgery by those who manipulate slowly and who do not have prompt, quick assistants. But when one can take advantage of a primary anæsthesia from the first administration of the bromide of ethyl, and having made every preparation in advance, will manipulate quickly, the new anæsthetic leaves nothing to be desired.

I will repeat, "can anything be more brilliant in surgery than a successful operation for squint, where an ugly deformity of years standing is promptly, thoroughly, safely and surely removed in less than one minute of time—fifty-two seconds for ethylization and operation?" This is the nearest approach to magic in the art of surgery.—*Maryland Medical Journal*.

CORRELATED DISEASES OF THE TEETH AND EAR.

By JOSEPH RICHARDSON, M.D., D.D.S.

(Concluded from p. 607.)

In Foster's work on "Physiology" we find the following physiological fact distinctly recognised: "The tone of any given vascular area may be altered, positively in the direction of augmentation (constriction) or negatively, in the way of inhibition (dilatation), quite independently of what is going on in other areas. The changes may be brought about by (1) stimuli applied to the spot itself, and acting either directly on the local mechanism, or indirectly by reflex action through the general vaso-motor centre; (2) by stimuli applied to some other sentient surfaces, and acting by reflex action through the general vaso-motor centre; (3) by stimuli (chemical, blood-stimuli) acting directly on the general vaso-motor centre."

In the case under consideration, the change in the tone of the arteries distributed to the ear would be induced by the class of stimuli spoken of by Foster under the second head, or by stimuli applied to sentient surfaces (the teeth and gums).

The physiological action of the vaso-motor system upon the tonicity or calibre of the arteries is thus demonstrated by experimental tests. I quote from Foster's "Physiology:" "Nerve fibres belonging to the sympathetic system are distributed largely to the blood-vessels, but their terminations have not as yet been clearly made out. (We may say, parenthetically, that by blood-vessels is here meant the arteries chiefly, if not altogether. As it is the function of the vaso-motor system to regulate the calibre of the vessels to which they are distributed, and as this can only be done by their action on muscular tissue, their action is limited to arteries, since the coats of the capillaries are destitute of muscular fibre, and the veins have but very slight traces of it.) By galvanic or mechanical stimulation, this muscular coat may in the living artery be made to contract. During this contraction, which has the slow character belonging to all plain muscle, the calibre of the vessel is diminished. During

relaxation more blood flows into the artery. Division of the cervical sympathetic of the rabbit affects the circulation on that side, the whole ear being redder than the normal, its arteries being obviously dilated, its veins unusually full, innumerable minute vessels, before invisible, come into view, and the temperature may be more than one degree higher than on the other side. If the upper end of the cut nerve be now stimulated by the interrupted current, the ear again becomes pale; much paler than normal. If the current be strong, the vessels diminish in size, so that the smaller ones disappear and the temperature falls. When the current ceases, flushing again occurs."

These interesting experiments demonstrate very clearly, it will be observed, the controlling influence of the vaso-motor nerves upon the conciliatory apparatus to which they are distributed, and, by consequence, the blood-supply in any particular area.

Reverting now to the nervous relationship between the ear and the teeth, it will be found that, by means of the otic ganglion, a nervous connection is established in the following manner:—"The nerves supplying the mucous membrane of the tympanic cavity, as well as that of the Eustachian tube and mastoid cells, are derived from the tympanic plexus, an anastomosis between the *otic ganglion*, petrosal ganglion of the glosso-pharyngeal nerve, and the carotid plexus, by means of the superior cervical ganglion, of the sympathetic. Now, by means of the otic ganglion, the soft palate, the drum-head, and the tensor tympani muscles, the lining mucous membrane of the cavity of the drum, and the integument of the external ear, are put into sympathetic relation with each other and other parts of the nervous system."* In studying this nervous connection, it is needful to bear in mind the important and essential part the otic ganglion plays as a *medium* of communication between the teeth and ears. The ganglion is situated on the inner side of the sensory division of the inferior dental nerve, and communicates with it by two or three branches, and also with the tympanic plexus, of which it is a component.

* Burnett.

Applying the facts in connection with the continuity of nerve fibre between the teeth and ear, and the functions of the vaso-motor system, it remains to explain the *modus operandi* by which irritation in a diseased tooth or in the gums may give rise to trophic lesions of the ear.

For purposes of illustration, I will take the case related by Dr. Burnett, where perforation of the tympanum and ulceration of the external auditory canal existed, and which, after persistent topical treatment had failed, was speedily and permanently cured by extraction of the decayed molars on the same side.

It has been shown, in tracing the nervous connection between the teeth and the ear, that the region embracing the tympanic cavity, the drum-head and external meatus, constituted an area correlated to the point of irritation in the diseased teeth by means of the otic ganglion. This ganglion is connected with the plexus of the sympathetic distributed to and over the external carotid artery, the branches of the latter supplying the external auditory canal with blood. It is easily seen, therefore, how this part of the ear becomes an area correlated to the point of irritation in the diseased teeth, through the medium of the otic ganglion. Now, according to Dr. Burnett, as the effect of any irritation in a vaso-motor nerve-tract is to excite vascular dilatation within the area correlated to such point of irritation through diminished inhibitory nerve power, we have following this impaired tonicity of the arteries, first, dilatation, then hyperæmia or congestion, inflammation, pain, effusion, supuration, and ulcerative destruction of tissue, as the case may be.

The same condition of altered blood supply may, from the same cause, occur in the drum-head, through the connection existing between the inferior dental nerve, the otic ganglion, and the internal carotid plexus of the sympathetic, in which case the blood supply of the tympanum through its branch of the internal carotid is augmented through a loss of inhibitory power in the vessel. In like manner trophic disease of the middle ear, or tympanic cavity, may ensue by reason of altered blood supply induced by an irritation conveyed over a nervous area, the components of which are the tympanic

nerve or plexus on one side, the otic ganglion as a medium, and the inferior dental nerve on the other side.

This paper would be incomplete without some reference to the correlated diseases of the gums and the ear during the period of teething. From what has already been written it will not be difficult to understand the sources of danger during this process. There is something startling and almost pathetic in the statistical revelations of the sufferings, disabilities, and mortality accompanying the eruption of the deciduous teeth. Out of eighty infants under fourteen months, examined by Dr. Wreden, of St. Petersburg, more than 80 per cent. had some form of ear affection. As these ear diseases were coincident with the period of teething, it is presumable that they were associated, in a large degree, at least, with the latter process.

Respecting reflex diseases of the ear during infancy, Dr. Woakes justly and forcibly remarks:—"The field of inquiry thus opened possesses interests far beyond those which appertain to the ear as an organ of special sense. Even from this narrow point of view, the possible loss of hearing as the result of destructive processes in the ear occurring as complications of infantile ailments, the issue is one of great anxiety. For a child who thus becomes deaf before it has learned to talk, will be dumb also, producing the pitiable object of an intelligent being deprived of two channels of communication with the outside world.

"As already intimated, it is on the very threshold of life that these sympathetic ear symptoms are brought into prominence. A child is cutting its teeth, and while the gums are yet swollen it suffers acutely from ear-ache. How do we know this, seeing the child cannot speak? Any one accustomed to watch carefully the symptoms of these little patients will scarcely fail to discern in the troubled face, the resting of the head on the nurse, the thrill of agony which passes across its features, accompanied with piteous cries or shrieks when its position is moved, especially if this be done suddenly, and more than all, the constant raising of the little hand to the side of the head; no one who has watched these symptoms will fail to connect them with the most agonising of all the sufferings of early life—*ear-ache*.

"Now, the point I wish to emphasise is this: the pain thus experienced is not what we vaguely call neuralgia; it is a definite trophic change, an inflammation taking place in the deeper seated tissues of the ear, beginning with congestion and stretching of an acutely sensitive region, passing on to exudation and suppuration, and capable of being recognised, if the proper means are used for doing this. If the case be seen early, all these symptoms are at once removed by a free incision of the swollen gums. But it often happens that those trophic changes just alluded to have set in before the practitioner is called upon to see his patient. The gums are, however, duly lanced, and very properly so, because reflex irritation is thereby lessened. But, to the disappointment of the practitioner and parents, the little patient is not cured. Then commences the orthodox rôle of treatment. Cold to the head, hot baths, mustard plasters, and perhaps a calomel purge, followed by enemata. Still the patient gets worse, convulsions set in, and the child dies."

Thus, though the original irritation leading to these results may no longer exist by reason of the lancing of the gums, yet a veritable otorrhœa is established and perpetuated, menacing continually the life of the child by an extension of the inflammatory processes to the brain, an occurrence for which every facility is arranged by the intimate communications which, in the infant especially, exist for such an issue.

Aside from the dangers resulting in these cases from the pressure of effused muco-purulent fluid within the tympanic cavity, and the pain consequent thereon, which threaten the life of the child by the irritation excited in the cerebral centres, there is a particular structural arrangement which greatly favours the occurrence of fatal convulsions in the infant. At this early age the petrous and squamous portions of the temporal bone are developed separately, and between them exists a well-marked fissure. At this fissure the dura mater dips down into the cavity of the tympanum or middle ear becoming continuous with its muco-periosteal lining. This process of dura mata carries with it a rich endowment of vessels derived from the middle meningeal artery, and which are the vessels belonging to the cavity. In the pro-

gress towards adult life this fissure becomes more or less obliterated, though the vascular connection with the arteries remains.

In the light of these facts it would seem useless to attempt to impress the gravity of the perils which environ the infant by reason of the reflex structural lesions so frequently occurring primarily from the irritation associated with teething. They carry their lesson with them, and point to timely and judicious treatment of the gums during this critical period.

On a review of the subject of this paper, which I am conscious has been imperfectly and, I am sure, by no means exhaustively treated, a question of peculiar interest to the Dentist presents itself for consideration. If irritation having its source in the various structures of the mouth is competent to produce trophic diseases of the ear in the manner related, may not irritation proceeding from morbid conditions of the ear give rise to trophic diseases of the several structures of the oral cavity? And if this be true, may not a better knowledge and a more general recognition of these reflex nervous relationships furnish the key to a solution of the origin of many affections of the buccal cavity, the etiology of which is now unknown or obscure? I earnestly commend this aspect of the subject to the thoughtful and intelligent consideration of the profession.—*Transactions Indiana State Dental Association*, 1882.

CASE OF INTEREST.

DR. RICH, of New York, describes the following interesting case: "The subject was a daughter of an eminent physician of this city. Her teeth had been continuously under my care from childhood. She grew up a fine, healthy, robust girl, with large, regular, fine teeth, which she kept in good order and was very proud of. When she was about twenty years of age she complained of an occasional severe pain in the right superior first molar. She consulted me about the trouble the tooth was giving her, and I made a

careful and thorough examination of the offending member, but could not discover any cause for the pain she was suffering. The tooth was perfectly sound, not a speck of decay about it, and not at all sore to pressure and percussion. The application of a current of electricity gave no indication of a dead pulp. The intervals between the periods of suffering became shorter, and within six months after its appearance it became continuous, and the torture from it was almost unbearable. She could not sleep except when under the influence of narcotics; she became extremely nervous and irritable, and the derangement of the system was general. She lost her appetite, and ran down in health and flesh very rapidly, and her condition became a source of great anxiety to her family. During all this time she was under the care of her father, a most skilful physician, who tried every means available to relieve her and enable me to save the tooth. The symptoms were something like those that occur when there are osseous formations going on in the pulp, and with the idea that possibly that may be the cause of suffering, I destroyed and extirpated the pulp; no such formations were found in it, and no relief followed the removal of the pulp. I then extracted the tooth. The pain and nervous irritation immediately disappeared and the patient rapidly recovered her health and good looks. When I looked at the tooth after taking it out, I found a part of the ruptured membrane was still attached to the palatal root; upon examining this under the microscope, I discovered three points of inflammation in different parts of the membrane that remained on the root, about the twentieth of an inch in diameter. With this exception, the membrane had the appearance of being strong and healthy, and except in those spots, was entirely free from inflammation. From some previous experiences, these spots of inflammation, the general character of the case, suggested spicules in the socket. The day after the tooth was extracted, I made a very careful examination of the socket, and found not only the three that corresponded with the points of inflammation, but discovered with the microscope a number of other small spicules in that and the sockets of the other roots. A few months after the extraction of the tooth I have just mentioned, the same symptoms were developed in the first supe-

rior molar on the left side. In the case of this tooth, as soon as the symptoms were well ascertained to be identical with those attending the commencement of her suffering, the tooth was extracted, as the patient would not undergo repetition of the torture experienced with the first one. And by this process this young lady has lost four of her upper molars during the last five years, the first and second molars on each side. As yet, none of the other teeth have been affected in that way."—*Odontological Society of New York*.

LEECHES UNSAFE.

A VERY singular case of death from poison communicated by a leech has recently occurred at Berne, Switzerland, and under circumstances which the medical gentlemen there are unable to explain. An individual residing in the town had been suffering for a few days from sharp attacks of toothache ; to alleviate the pain his dentist recommended him to apply a leech to his swollen gums. The remedy appeared simple, and the patient, on his way home, bought a leech at the chemist's shop, which he applied as directed, at once. Two hours later he felt himself unwell, and remarked that his lips were somewhat swollen, the cheek, neck and chest becoming equally so toward night. He neglected to seek medical assistance until the following morning, and this delay proved fatal. When the doctor was at length called in, the patient's head was much inflamed, his breath was laboured, delirium ensued, and in twenty-four hours he expired. The post-mortem examination, made by experienced doctors, revealed the fact that the cause of death was blood poisoning, which was traced to the moment when the leech was applied to the gums. It was evident that the blood-sucker had communicated a poison which had rapidly spread through the whole of the system ; but a point which remains to be cleared up is, how the leech, which had been several days at the chemist's when the deceased purchased it, could have become a medium for transmitting this virulent poison.—*Missouri Dental Journal*.

Dental News.

THE DENTAL HOSPITAL OF LONDON.

THE Annual Distribution of Prizes to the Students of the Dental Hospital of London took place on the evening of Monday, the 2nd inst., in the large Ball Room of Willis' Rooms, Mr. CHRISTOPHER HEATH, F.R.C.S., Consulting Surgeon to the Hospital, in the chair.

After a little introductory music, the DEAN (Mr. Ken Underwood), read the following

REPORT.

I must apologise for interrupting the harmony of this evening's meeting, but work must be done and duties must be fulfilled. I must, therefore, ask your indulgence while I say the few words that I ought to say in the briefest possible manner. I may explain that our anxiety to relieve the monotonous course of our Annual Meetings for some years past has led us to try and stimulate the kind interest taken in us by our friends by adding music to our programme, and so to make the business of the evening pass off more brightly and pleasantly, and as we have this year a strong musical contingent among our students, this seemed to be the time to make the change if it was to be made at all.

There is another reason for our doing something more than usual this year to mark our recognition of the fact that the Summer of 1883 marks an era in our existence as a Medical School. Through the unbounded generosity of one whose name is a byword for generosity, Mr. Edwin Saunders, we have been enabled to acquire and add to the hospital the tower adjoining it. What this means to us, cramped as we were for space and crippled for room, we only, who felt the want so keenly can tell. It means the additional room without which we had great difficulty in carrying on our work and which gives us nearly double the accommodation we possessed before. The condition of the school is, I am happy to say, thoroughly satisfactory; the entries in May were

larger than they have been for some years, and we bid fair to occupy our enlarged hospital. Only one change has taken place in the staff of the hospital during the past year. Mr. Medwin, who for so many years has been connected with the hospital, a connexion which we all look back upon with pleasure, has resigned; and in his place, Mr. Claude Rogers, lately one of the demonstrators, has been elected. I cannot allow Mr. Rogers' work as a demonstrator to pass without saying how greatly we are indebted to him for the manner in which he the first, made the post one of exceptionable value to the School, and through it to the patients generally. In his place Mr. William Hern has been appointed. He was lately House-Surgeon and Saunders' Scholar; in fact, I feel that to introduce his familiar name (so well known to our old friends who come to these gatherings) is an impertinence, and so I shall content myself with saying that our expectations of him (and they were not small) have been fully realized.

The Saunders' Scholarship has been won this year by Mr. Henry Baldwin, and I may still retain my character for impartiality, I trust, when I say that never was this distinction more truly earned or better deserved. Mr. Baldwin, as you will see from this, has won the first Metallurgy and Dental Surgery Prizes, the second Dental Anatomy and Buchanan Prizes, together with several Honorary Certificates; so his claim does not admit of any dispute. Our kind friend Mr. Buchanan still continues his generous gift to us of an annual prize; and we have to thank Messrs. Ash & Sons for a similarly generous gift, so that we are becoming rich in our incentives to work if any such were needed by our students. I must express our thanks to our House and Assistant House-Surgeon through the year, upon them depends largely the success of our work.

I cannot close my Report without expressing on behalf of myself and my colleagues our deep thanks to our friends who come to encourage us by their presence to night. To the ladies, we feel as we ought, most deeply grateful, and we can only hope that the music which they have heard and will hear, will give them as much pleasure as it gives us to welcome them here.

You will all feel grateful to me for my short Report, and I shall not take up your time by apologising for it.

Mr. HEATH then presented the Prizes and Honorary Certificates in the following order:—

Saunders' Scholarship for General Proficiency, Mr. Harry Baldwin.

Mr. Buchanan's Prize, for Essay on "Caries," to Mr. Harry Baldwin, and Certificates of Honour to Messrs. A. M. Fox and W. B. Paterson.

Messrs. Ash & Sons' Prize, for Essay on "Hæmorrhage," to Mr. W. B. Paterson.

Mechanical Dentistry.—1st Prize, Mr. E. Latchmore; 2nd, Mr. W. R. Ackland; Hon. Certificates to Messrs. Harry Baldwin and H. S. Burton.

Metallurgy.—1st Prize, Messrs. H. Baldwin and Gabriel (bracketed equal); 2nd, Mr. A. M. Fox; 3rd and Hon. Certificates to Messrs. R. W. Stamer and J. Petherbridge.

Dental Surgery and Pathology.—1st Prize, Mr. H. Baldwin; 2nd, Mr. A. M. Fox; and Hon. Certificates to Messrs. J. Petherbridge, W. R. Ackland, Williams, and Peel.

Dental Anatomy and Physiology.—1st Prize, Mr. J. Petherbridge; 2nd, Messrs. H. Baldwin and W. R. Ackland (equal.)

Operative Dental Surgery.—Prize, Mr. G. Hooper; Hon. Certificates to Messrs. W. B. Paterson, H. Baldwin, and E. Latchmore.

The CHAIRMAN then proceeded to deliver his address, for which see p. 637.

Mr. GREGSON then briefly proposed a vote of thanks to the Chairman, saying that although many eminent men had presided on these occasions in previous years, no one had ever occupied that position whose name was better known to, and respected by, all ranks of the profession than Mr. Christopher Heath.

The motion having been carried with much applause, Mr. Heath replied. The musical programme was then resumed and most successfully carried out.

APPOINTMENTS.

Mr. J. O. BUTCHER, L.D.S., has been appointed House Surgeon to the Dental Hospital of London, *vice* W. F. Cornelius, L.D.S., resigned. [Mr. H. L. Pillin, Assistant House Surgeon.

FRANK A. HUET, Esq., L.D.S., of Manchester, has been appointed House Dental Surgeon to the Northern Counties Hospital for Incurables, Manchester.

ON the 19th inst., the Council of the Royal College of Surgeons, in Ireland, will elect from among the Fellows an Examiner for the diploma in Dental Surgery. The vacancy having arisen in consequence of the death of Mr. B. Wills Richardson.

THE USE AND ABUSE OF AMALGAM.*

By ALTON HOWARD THOMPSON, D.D.S., Topeka, Kansas.

WHATEVER may be said against amalgam as a filling-material on the score of ethics; however much we may deprecate its extensive and increasing employment, and regret the consequent decadence of high art in the execution of gold operations throughout the profession, the gigantic and stubborn fact remains that its employment for filling teeth is most extensively prevalent, and is on the increase. The presence of amalgam with us is a tremendous fact which we must accept, and accepting must study. It is a great factor in the Dental economy of the day, which cannot be ignored, and we are utterly unable to prohibit its use, even were it as pernicious as some would have us believe.

On purely ethical and artistic grounds, objection is made to amalgam on the score of its being an ignoble, filthy, degrading material, unfit for the touch of the members of a high and noble

* Read before the Kansas State Dental Association at Lawrence, Kansas, May 2nd, 1883.

calling. The protests of the all-gold critics are not aimed so much at its practical value and tooth-conserving qualities, as against its plebeian origin and nature. The cry of the golden esthetes is, in fact, a caste prejudice, an ostracism of this Pariah among filling-materials, because of its low pedigree. We are told that no Dentist worthy of the name will use such a degrading material, that it compromises not only his professional but also his personal dignity and purity; that the miserable ease with which it is stuffed into cavities tends only and forever downward, with the result of the rapid depreciation of operative skill, the decadence of art, and the retarding of the cause of the artistic propaganda which was the hope of the masters in operative art. But we are *not* told that we should abandon it because it is worthless practically, that it cannot save teeth, that its conserving quality is a failure. Its practical value to the practitioner stands unchallenged, and therein is its strength, the one cause of its universal use to-day and of its increasing popularity. In point of fact it saves more teeth than any other filling-material, taking teeth of all qualities as they come to the Dentist, and taking all grades of operators as they occur in the ranks of the profession. The poor workman and mediocre operator, who constitute the vast majority of the Dental rank and file, can make better amalgam than gold fillings in all grades of teeth as they meet them in daily practice, and with amalgam they can save more teeth than they possibly could with gold. For this reason amalgam saves more teeth in this country to-day than gold, and is more generally useful.

Out of the great army of Dental practitioners in the United States, of all grades and assorted abilities, there is but a small per cent. who are capable of using gold as it should be used, and of saving teeth with it as they should be saved; a somewhat larger proportion work gold indifferently well, with some success, but not as the highly favoured and artistic few; but the great residue use little gold and much amalgam, because they can thereby do better work and more faithful service to their fellow man, and therein they are right. They can fill teeth with it easily, rapidly, and cheaply, for it brings serviceable tooth-saving within reach of a great many people who cannot afford the services of even the ordinary gold operator. Yet, in view of this great

economic fact, the gold tyrants would utterly prohibit the use of amalgam and let all these people go without the service of even the indifferent tooth-saver. The artistic difficulty of working gold is with them a chief recommendation, in that it excludes all men of mean degree and low abilities.

It is an indisputable fact, of course, that the use of amalgam will not contribute to the development of artistic ability in the working of gold throughout the mass of the profession; but there remain, also, the facts that the mass of the people cannot be brought up to artistic gold prices, and that without just compensation high art cannot be developed in any department. Art must have its wealthy patrons or it cannot flourish, and especially is this true of artistic tooth-filling. Good gold-filling cannot be performed without good fees, and the classes of people in this great land, where wealth is so unequally distributed, who can compensate the skilful operator for his outlay are not sufficient, so to speak, "to go around." Therefore there must be a cheaper material that is reliable and serviceable, and amalgam is that material. A high artistic ability in gold work must, therefore, go down before a cheaper material. These are disagreeable facts, but we must take things as we find them.

And yet amalgam is not necessarily degrading, and the poor operator is not alone in his use of it. A candid and discriminating judgment compels its employment at times even by the best operators—*i. e.*, by those who are good men and who have the greatest good of their patients at heart. Thus conscientious men often find themselves obliged to use amalgam when they would prefer to use gold; but it becomes a question between amalgam and extraction; amalgam performs services which are beyond gold, and saves teeth which gold cannot save, and so the honest operator will save teeth with amalgam rather than not save them at all. This is the honest and judicious practice, the exercise of true eclecticism in the selection of filling-materials. Extreme theories of practice are proverbially unsafe and dishonest. We must follow the safe middle path of conscientious, unbiased eclecticism.

(To be continued.)

Correspondence.

[We do not hold ourselves responsible for the opinions expressed by our Correspondents.]

CAN RUBBER IN PARTIAL SOLUTION BE USED FOR PACKING?

To the Editor of the "British Journal of Dental Science."

I have used a solution of Ash's "A Pink Rubber," for repairs, for many years, but find always that all the solvent must be evaporated from it before finishing the packing, or the result is porous and useless. It is only natural to expect this, as any solvent if left expands considerably with heat, and forms spaces in the rubber which have no opportunity of closing up again, and for this reason, except as a thin paint, which requires careful drying, rubber in solution is quite inadmissible.

Yours, &c.,

THOS. FLETCHER.

Warrington.

AMALGAMS.

To the Editor of the "British Journal of Dental Science."

Your correspondent "Cranbrook" states: "There is undoubtedly a slight shrinkage in any material in which mercury is used." It is evident from this statement that his experience has been extremely limited, and that he has not read the results of experiments which have been repeatedly published in the Journal. These experiments have been repeated by so many independent and reliable observers, both here and in America, that it is strange to see anyone writing with apparent authority making such a statement. The expansion of certain amalgams has been repeatedly tested and measured, and it is known to be considerable in, for example, precipitated silver and mercury. The statement would be correct if revised to read, "There is undoubtedly a slight shrinkage in any material in which mercury is used, *except* those which are free from shrinkage, and those which expand." With this "trifling" alteration the statement would be correct.

Yours, &c.,

THOS. FLETCHER.

MONTHLY REPORT OF CASES
TREATED AT THE NATIONAL DENTAL HOSPITAL,
FROM JUNE 1ST TO JUNE 30TH, 1883.

Number of Patients attended	.	.	.	.	.	.	1507
Extractions	{	Children under 14	.	.	.	.	388
"	{	Adults	.	.	.	.	896
"	{	Under Nitrous Oxide	.	.	.	.	0
Gold Stoppings	.	.	.	.	.	.	82
Sheets of Gold used independent of Pellets	.	.	.	.	.	.	—
Other Stoppings	.	.	.	.	.	.	220
Advice and Scaling	.	.	.	.	.	.	207
Irregularities of the Teeth	.	.	.	.	.	.	106
Miscellaneous	.	.	.	.	.	.	150
Total	.	.	.	.	.	.	2269

CHAS. W. GLASSINGTON,
House Surgeon.

MONTHLY REPORT OF CASES TREATED AT THE DENTAL
HOSPITAL OF LONDON.

FROM JUNE 1ST TO JUNE 30TH, 1883.

Extractions	{	Children under 14	.	.	.	.	503
	{	Adults	.	.	.	.	929
	{	Under Nitrous Oxide	.	.	.	.	439
Gold Stoppings	.	.	.	.	.	.	180
White Foil ditto	.	.	.	.	.	.	9
Plastic ditto	.	.	.	.	.	.	885
Irregularities of the Teeth treated mechanically	.	.	.	.	.	.	169
Miscellaneous Cases	.	.	.	.	.	.	168
Advice Cases	.	.	.	.	.	.	163
Total	.	.	.	.	.	.	3445

W. F. CORNELIUS,
House Surgeon.

QUARTERLY REPORT OF CASES TREATED AT
THE DENTAL HOSPITAL OF EXETER, BEDFORD CIRCUS.

FROM APRIL 1ST TO JUNE 30TH, 1883.

Extractions	{	Children under 14	.	.	.	.	295
	{	Adults	.	.	.	.	686
	{	Under Nitrous Oxide and Ether	.	.	.	.	70
Stoppings	{	With Gold	.	.	.	.	33
	{	With White Foil	.	.	.	.	16
	{	With Plastic Material	.	.	.	.	196
Miscellaneous—Irregularities of the Teeth, Scaling, &c.	.	.	.	.	.	.	138
Total	.	.	.	.	.	.	1434

HENRY B. MASON,
Hon. Sec.

VACANCY.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark Bridge Road, S.E.—
Dental Surgeon. Applications by the 24th inst.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 82, Mortimer Street, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
 2. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
 3. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
 4. All communications relative to subscriptions and advertisements are to be addressed to the Publisher, Mr. J. P. Segg, 82, Mortimer Street, Regent Street, London, W.
 5. The Journal will be supplied direct from the office on PREPAYMENT of subscriptions as under:
Twelve Months (post free) . . . 14s. 0d.
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ANSWERS TO CORRESPONDENTS.

"Dental Student."—Some parts of Australia and New Zealand require that all Dental practitioners be registered, but we believe not all. Registration in England will suffice there.

Communications have been received from Messrs. "Dental Student," "Henry Plugger," "Bulljone," "Forty Years' Practice," T. Fletcher, M.R.C.S., G. Clements, "A Colonial Registered Dentist," T. O. Butcher (London), H. B. Mason (Exeter), W. F. Cornelius (London), J. Taylor (Newbury), Y. Z., H. Baldwin (London), S. B. Chandlers (Canada), Ash & Sons, (London), C. Rutterford (London), I. J. Runk (London).

CORRECTION.—Errata.—On page 586, line five, before "which may be," read "particulars of which could."

BOOKS AND PAPERS RECEIVED.

"Lancet." "British Medical Journal." "Anæsthesia," Dr. N. T. Freeman. "Annual Announcement of Pennsylvania College of Dental Surgery." "Vichy and its Therapeutical Resources," by Dr. Prosser James, M.D. "The Southern Dental Journal." "Revue Odontologique." "Dictionnaire Encyclopedique de Sciences Medicales Dents," by Dr. Magitot. "Gazette de Hopitaux." "Announcement, Royal College, Dental Surgeons of Ontario." "Dental Record." "Dental Cosmos."

NOTICE.—We desire that it may be clearly understood that our pages are open to all for free expression of their views on matters connected with our profession. We only ask for terseness of expression and MODERATION IN TONE.

When otherwise unobjectionable, difference of political or other opinion will never be regarded by the Editor as a disqualification for the admission of any communication to the pages of the BRITISH JOURNAL OF DENTAL SCIENCE.

British Journal of Dental Science.

No. 373.

LONDON, AUGUST 1, 1883. VOL. XXVI.

ON A CASE OF SPONTANEOUS CLOSURE OF CLEFT PALATE.

By P. J. THOMSON, M.R.C.S. Eng. and L.R.C.P. London.

A CASE of this kind was shown at a meeting of the Berliner Medincinische Gesellschaft, last year, by Dr. Wolff. The subject of this very rare form of case was a boy aged 13. His voice had the usual nasal character met with in persons with congenital cleft palate. On looking into the mouth, instead of finding the expected cleft, a well-shaped palate was seen, which showed, however, the following unmistakable signs of a former spontaneously (perhaps in utero) closed cleft, irregular position of the upper incisor teeth, bifid uvula, cord-like cicatrix in the middle line of the involucrum palati duri, together with a swoollen fold lying immediately to the left and parallel with the cicatrix; the continuation of the cicatrix through the soft palate to the wide uvula in the form of a fine white line, which could be easily felt, but could only be seen on careful inspection; finally through the closed fissure could be felt a separation of the hard palate in the form of an equilateral triangle, situated in the middle line, with its base looking backwards; lastly, a fissure about $1\frac{1}{2}$ cent. long in the horizontal part of the os palati, and the posterior part of the palatine process of the superior maxilla. On passing the finger behind the velum, the vomer could be felt to be deficient in the posterior portion, and the choænas to be wanting in their natural division. The upper lip was of a normal shape but exceedingly short.

Dr. Wolff stated that he had only met with five similar cases in the course of his readings. In his remarks on the bearings of this and similar cases on the results of urano plastic and staphyloraphy, Dr. Wolff pointed to the fact, that even in the cure by nature herself, which takes place without any wounding of the borders, so without any loss of substance, without any hæmorrhage, or any cicatricial contraction, the voice always retains its abnormal character. No form of operation

was likely to give such favourable results, for in every one some portion of tissue must be sacrificed, and in most of these cases it was already very deficient. Thus surgeons could hardly expect to obtain satisfactory results except by a combination of operative measures, and the subsequent prothesis by means of soft obturators. This last form of treatment he intended to carry out in the present case.

The rhinoscopic appearances of this patient were then given by Dr. Prankel. The post nasal examination was very easily made on account of the unusual position of the soft palate, which hung very much forward, and left an interval of about two centimetres between its free border and the wall of the pharynx. The mucous membrane of the posterior nares is swollen, and the pharyngeal tonsil a good deal enlarged. The most extraordinary appearance however was that of the septum narium, which was inserted very much further forward than usual, and thus its direction was sharply from above downwards and behind forward. The swollen inferior muscles stretched far backwards over the septum. In the normal condition, they lie within the choanto, in the present case they reached as far as the naso pharyngeal space and covered the lower part of the septum. When the boy pronounces the letter a or æ, the pharyngo nasal isthmus remains as a round passage which opens much wider than it does normally. Even in the act of deglutition the isthmus was not closed; so much so that even when the child swallowed, the septum narium could be seen with the rhinoscopic mirror. This fact pointed to a faulty and deficient condition of the constrictor pharyngi.

ON THE THERAPEUTICAL INDICATIONS IN DENTAL CARIES.

By Dr. E. MAGITOT,

Member of the Société de Chirurgie, Laureate of the Institute, &c.

THIS well-known Dental writer has been publishing, under the above heading, in the "Gazette Hebdomadaire de Médecine et de Chirurgie," a series of very interesting papers on the treatment of Dental Caries.

The author begins by stating that caries in the teeth may be divided into three periods: a. *Superficial*, or caries of the enamel. b. *Middle*, or caries of the dentine. c. *Deep*, or penetrating central caries; the last period being subdivided into three stages according as the pulp is *exposed*, *inflamed*, or *destroyed*.

Caries is said to be essentially a chemical process in the enamel, but when it affects the dentine it causes an inflammatory reaction, which may be sufficient to bring about a cure, as in dry caries.

1. INDICATIONS AND GENERAL THERAPEUTICAL RULE IN DENTAL CARIES.

Under this heading are considered: 1. *Cure of the diverse accidents caused by caries.* 2. *Preservation or restoration of the organ and the re-establishment of its use.*

In the first place are considered the general rules which should apply in caries in this situation, as well as in any other part of the body,—i.e., antiphlogistics in inflammation, treatment of diathetic or causative diseases, &c., &c. In the second, the general rule of treatment is,—a. *The simple resection of the affected tissues.* b. *The filling or obturation of the diseased cavity.* Both these methods have for their object the *isolation*, that is the removal of the healthy tissues from the different causes of decay.

2. THERAPEUTICAL INDICATIONS IN EACH PERIOD OF CARIES.

A. *Indications in first period.*—The first period, in which there are only fissures and holes in the enamel, is characterised by the absence of pain. If the carious spot is on the triterating surface, plugging should be resorted to at once; if it exists on one of the lateral surfaces, resection by the file, so as to leave a smooth surface, will be all that is required.

B. *Indications in second period.*—This period may be divided into three secondary periods.

1. In which the divisions final terminations of dental fibrils are affected; this is an exceedingly painful stage of the affection.

2. In which the fibrils are affected in their course only; very little pain is complained of at this period.

3. In which the fibrils are affected in the portions adjacent to the pulp; this last is also a very painful stage.

In the first of these secondary stages slight irritant or astringent applications should be used, the object being to cause the production of secondary dentine; the extremities of the fibrils being thus transformed into a compact and homogeneous mass. This process is identical with what happens in *dry caries*, which in a large number of cases really constitutes a form of spontaneous cure.

2. In the second of these stages, as there is hardly any pain, the carious cavity might be stopped at once, but in most of these cases it is as well to use some astringent and antiseptic form of dressing.

3. In the third stage, soothing and anæsthetic remedies

should be applied in order to bring about the cicatrisation of the carious cavity.

DRESSINGS FOR CARIES.

These should always be applied on single or double layers of cotton wool; they may be divided into:—

Simple, Anæsthetic or Narcotic, Astringent, Occlusive.

Simple dressings.—The following mixture forms a good application of this kind.

A. R Chloroform.

Tinct Opii aa. 2 gr.

Tinct Benzoin 8 gr.

It should be applied to masticating surfaces, or to the interstices between the teeth.

Anæsthetic or Narcotic should be used in all painful conditions of the teeth.

B. R Chloroform.

Tinct Opii.

Creosot, aa. 2 gr.

Tinct Benzoin, 6 gr.

The above is a valuable remedy in all cases accompanied with much pain.

Astringent.—The object is to cause a secondary cure in sensitive teeth.

Various objections are mentioned to the use of sulphate of zinc, acetate of lead, alum, iodine, iodoform, nitrate of silver, chloride of zinc. The use of tannin, either in the form of the powder or in the following solution, is strongly recommended:—

R Pulv. Acid Tannic, 5 oct. gr.

Tinct. Benzoin, 10 gr.

This should be used until the tissues are quite insensible. In exceptional cases only, where this remedy is ineffective, arsenious acid should be applied.

Occlusive.—These dressings are used as a temporary or provisional filling. Wax, gutta percha (the cavity having been previously washed out with chloroform), collodion (ordinary or flexible), tin-foil, may all be used for this purpose. The following are given as good recipes:—

R Resin, in tears, }
Benzoin, do. do. } aa. 5 gr.

Boiling in alcohol G. I. to make a solution of syrupy consistence.

R Tinct. Benzoin, 5·0 gr.

saturated by means of heat and then evaporated to consistence of syrup.

R Collod. Flexil.

Tinct. Benzoin, aa. 5 gr.

The two first preparations are preferred, and should be used with or without some astringent dressing, each dressing being allowed to remain for about a week.

c. *Indications of third period.*—This stage of caries is the one most frequently met with. The first indication in this period is to get rid of the spontaneous pains, which depend upon some degree of inflammation or strangulation of the pulp in the pulp cavity. These pains usually cease on the destruction of the gangrene of the pulp. At this stage the mixed anæsthetic and narcotic application have a wonderful action. Mixture B oftens relieves the pain in the course of a few minutes.

If these applications fail hypodermic injections of morphia in the cheek may be resorted to. As soon as the pain is relieved means should be taken for some form of rational curative treatment.

The object of the treatment at this stage of caries is the removal of the inflammatory condition of the pulp, and the formation of secondary dentine which will close the aperture of communication between the air and the pulp. This result should only be tried for in recent denudation of the pulp. Under anæsthetic applications the pulp is occasionally restored to a healthy condition and secondary dentine is then thrown out.

The pulp itself, however, may be found enlarged, gangrenous or reduced in size, in such cases it should be destroyed.

The various means of effecting this are then passed in review.

The nerve extractor or barbed stiletto is objected to because it is painful and not efficient. The various forms of cauteries, actual, electric, thermo-cautery, are not to be used on account of the radiation of heat, which so often gives rise to violent inflammation.

The author prefers for this purpose caustics. Papaine, of which so much was expected, has been shown to be of no value. Of liquid caustics, the only ones that should be used are chloride of zinc, either alone or mixed with an equal quantity of a saturated solution of chloride of antimony, or in the form of the *pâte de cauquoin*, or the solution of arsenious acid in glycerine.

But the best kind of caustic for the destruction of the pulp is some solid form, and above all, arsenious acid. It should be only used in the *opaque porcelaneous* state, and great care should be taken not to apply too much. The conjunction of arsenic with morphia does not present any advantage. In no case should the application of arsenic be left for more than twenty-four hours.

The solution of arsenic in glycerine (1 in 4), so strongly recommended by Dr. Gallippo, gives rise to perfect crises of pain, and should therefore never be used.

The author next passes in review the various accidents which may be caused by an over dose of arsenic applied for this purpose of destroying the pulp, such as ulceration of the gums, &c., periostitis, or alveolo dental periostitis, which is characterized by pain on pressure, dull aching continuous pain, sensation of lengthening of the tooth, and for the relief of which he recommends the application of a leech or two to the gum. As soon as the pain has been entirely removed the tooth should be stopped or filled at once.

The conclusions arrived at by Dr. Magitot, are :—

1. That the general therapeutical indication in dental caries is the application of some form of isolation which is obtained in practice by resection or obturation (filling).

2. The special one in the first period of caries, which is a painless one, is a resection or an immediate filling.

3. In the second period, the application of astringent or caustic remedies quite superficially, followed by plugging.

4. In the third period, the destruction of the pulp, the preparation of the cavity, and treatment of concomitants and subsequent stopping.

5. If this method of treatment be carried out a cure will be obtained in 99 per cent. of the cases of caries in the teeth.

[These papers written in a purely medical paper for pure surgeons, may perhaps not bring forth any points very new to our readers, but they are, nevertheless, of great interest as showing the views held by our French confrères on one branch of Dental therapeutics.—Ed.]

AN ABSTRACT OF REMARKS ON DEATH FROM METHYLENE AND ON THE USE OF OTHER ANÆSTHETICS.

By F. JUNKER, M.D.

A RECENT number of the "Prager Medicinesche Wochenschrift," publishes a case of death at Prague, during the administration of chloride of methylene. This being the tenth fatal case, must excite suspicion as to its vaunted immunity from danger.

The patient, a married woman, aged 27, suffered from a cyst of the parovarium, for removal of which, ovariectomy was performed. On account of the anemic and weak condition of the patient it was considered necessary to take special care in the administration of the anæsthetic. One assistant watched the

pulse, whilst another of tried experience administered the methylene. After ten minutes, during which four drachms were inhaled without producing complete anæsthesia, the radial pulse stopped; respiration, however, continued for a few minutes after. The patient was pale and slightly livid. The head was immediately lowered, tongue drawn forward, and Sylvester's artificial respiration induced; free admission of air, and administration of ammonia to the nose, the injection of musk subcutaneously, were all tried without success. Life had fled.

The remainder of the narcotic was given to an eminent German chemist for analysis with the following results. He says:—

“The bichloride of methylene, CH_2Cl_2 , I examined, is a mixture of chloroform and alcohol, resembling chloroform in colour and odour; its density, found by the pyknometric method at 17.1° cent. (105.8° Fahr.) was 1.3495, nearly the density of pure chloride of methylene.

“From its boiling point it is plain that the fluid either contained no chloride of methylene at all, or a mere trace.

“The boiling point of chloride of methylene is 41° cent. (105.8° Fahr.); the preparation under examination commenced to distil in the water bath with Glinsky's boiling tube at 47° cent. (116.6° Fahr.), and continued to do so between 49° and 53° cent. (120.2° and 127.4° Fahr.), without leaving a residue. When shaken with water the components separated. About one-fifth of its volume mixed readily with water, whilst the volume of the insoluble portion underwent no change after prolonged shaking.

“The clear aqueous solution gave Liebig's iodoform reaction; treated with chloride of benzoyl and concentrated solution of soda, it gave, unmistakeably, the smell of benzoic ether (Berthelot's test).

“The residuum, which was not dissolved, was dehydrated by chloride of calcium, and distilled completely at a temperature of 59.5° to 60.5° cent. (139.5° to 140.45° Fahr.), which corresponds to the boiling point of chloroform (at 737 mean pressure), which Liebig and Regnauld found at 61° cent. (141.8° Fahr.). This distilled fluid had the density of chloroform (1.4885 at 17.1°), or $1.525\frac{1}{2}$ at 0° cent., and gave, when treated with anilin and alcoholic solution of potash—the smell of isocyan-phenyl, characteristic of chloroform.”

Therefore, doubtless, the so-called chloride of methylene was chloroform diluted with absolute alcohol. The proportions calculated from the density, diminution when shaken with water, and the quantity of pure chloroform, were one part of alcohol to four of chloroform.

That the boiling point was lower 51° cent. (123.8° Fahr.) than the boiling point of either compound (chloroform boils at 61° cent., 141.8 Fahr., alcohol at 78° cent., 141.8 Fahr.), is no contradiction to the result of the experiment, when we remember that a mixture of two fluids may have a boiling point below that of the more volatile of its components. The boiling point of chloroform is lowered by the addition of absolute alcohol.

No decomposition of the chloroform occurred, therefore the fatal effect is not attributable to this cause.

The necropsy, though interesting in itself, threw no light on the cause of death.

The dura mater was normal, the brain substance and meninges were anemic and œdematous. The mucous membrane of trachea, larynx and pharynx, was pale; some mucus was found in trachea.

The lungs were pale on their anterior aspect, the posterior regions contained a moderate quantity of blood, and were œdematous; about an ounce of serum was found in the pleural cavity, and some also in the pericardium. Heart normal in structure, the ventricles contained bright blood, doubtless a post mortem appearance, mixed with air bubbles; a few fibrinous clots occupied the auricles.

Sir Spencer Wells has used bichloride of methylene in nearly all his operations. Since its introduction by Dr. Richardson, 1867, he has used it in 1200 cases, and never had a fatal accident. He distinctly states his preference for it in suitable cases, and that with it there is less liability to vomiting. C. Kappeler (Bern), in his work on Anæsthetics, which forms the 20th vol. of Billroth and Luecke's *Deutsche Chirurgie*, admits that the methylene is less liable to produce sickness chloroform, but adds, it is equally dangerous.

The specific gravity of methylene is 1346. It decomposes under the influence of light and air, like chloroform, and needs the addition of absolute alcohol for its preservation; it is inflammable. Its low boiling point causes its rapid evaporation, hence it is more quickly diffused through the lungs than chloroform, and more quickly eliminated; its effects are more rapid but less lasting.

In Germany they use at present a special description of chloroform, manufactured from chloral, this rarely produces vomiting.

The sleep produced by methylene lasts longer than its inhalation, so its administration may be suspended for a time during an operation, and thus the risk of narcosis is diminished.

The following are the fatal cases immediately attributable to the bichloride of methylene :—

LIST OF FATAL CASES.

1. A healthy man at Guy's Hospital, aged 40, died, having only inhaled one drachm of chloride of methylene in the recumbent position. Electricity and artificial respiration were tried without any success.

2. A patient at Charing Cross Hospital, aged 39, although he looked pale and anemic (he suffered from a malignant tumour in the left antrum of Highmore), his pulse was good. At first four, and afterwards two drachms were administered, in the sitting position. Every attempt to save life failed.

3 and 4. Male patient at Charing Cross Hospital, and a female at Radcliffe Infirmary, Oxford, died, after a very small quantity had been administered.

5. Male, aged 52, having his shoulder reduced at the Bath United Hospital, died, but in this case there was a slight heart affection.

6 and 7. Male patient at Middlesex Hospital expired after the inhalation of two drachms. Another male patient at same place, and from the same quantity.

8. A female patient at the London Ophthalmic Hospital, who had had chloride of methylene administered before, died very suddenly, three drachms having been given.

9. A sailor, a healthy man, died at same hospital, two drachms being the dose. There are a few more fatal cases recorded, but as in them methylene was not used alone, but in combination with some other anæsthetic, we cannot properly ascribe them to this cause.

Regnauld lately stated that the bichloride of methylene, so much used in England, is composed simply of four parts of chloroform to one of wood spirit. This mixture he has used under the name of Regnauld's Mixture, and it has given very satisfactory results.

From the foregoing remarks it will be seen that chloride of methylene is not wholly unattended by danger in its use, and that great care must be taken in its administration.

AN ABSTRACT OF STATISTICS OF ANÆSTHETICS IN RELATION TO AFTER-SICKNESS AND DEATH-RATE.

By R. MARCUS GUNN, M.B.

THE following statistics are the result of the experience of a large number of cases of anæsthesia, compiled by Dr. M. Gunn, in relation to after-sickness and death-rate.

Notes were kept of the anæsthetic employed; age, sex, general health of patient; the time when food was last taken; also the barometric pressure and temperature, &c.

From November, 1876, to January, 1880, anæsthetics were given 4138 times, and sickness occurred in 1902 cases, or 45 per cent. Females are more liable to after-sickness than males, in the proportion of 50 to 41 per cent.

The percentage of after-sickness at various ages is as follows:—

Under 1 year	4 per cent.
Above 1 year and under 5 years .	31 "
" 5 " " 10 " .	63 "
" 10 " " 15 " .	72 "
" 15 " " 20 " .	60 "
" 20 " " 25 " .	56 "
" 25 " " 30 " .	52 "
" 30 " " 40 " .	39 "
" 40 " " 50 " .	31 "
" 50 " " 60 " .	32 "
" 60 " " 70 " .	31 "
" 70 " " 80 " .	27 "
" 80 " " 90 " .	29 "

Thus we find that the liability to after-sickness is at its maximum at the beginning of puberty, and decreases gradually at each end of life.

Chloroform was frequently used for children under 3 years and for adults over 60 years. Between these ages, ether, a mixture of ether and chloroform vapour, or a mixture of absolute alcohol, chloroform and ether was given—called the A.C.E. mixture. About half a drachm of chloroform and an ounce of ether were sufficient to produce anæsthesia, and the average time was 4 minutes.

Statistics shewing the percentage of sickness after the various anæsthetics:—

Ether, by sponge	48 per cent.
Ether, Clover's duplex	53 "
Ether and chloroform	47 "
Chloroform	19 "
A.C.E. Mixture	29 "

One is at first struck with the small percentage of chloroform sickness; but we must remember that it was administered at the extremes of life-periods shown to be less liable to sickness. Ether sickness does not last as long as that of chloroform.

Speaking generally, in all cases a fast of four hours should be insisted upon before anæsthetic is administered, in order to obviate, or to minimise the risk of sickness.

The weather has also some influence on anæsthesia, due, perhaps, to the occurrence of easterly winds. The lowest percentage always occurred in March.

At Moorfields Hospital ether has been administered 13,000 times, with only one fatal case.

"The vomiting of acute intestinal obstruction, and peritonitis has been justly attributed to peripheral irritation of the vagus. The great and sudden collapse in such cases being due to a reflex inhibition of the heart's action, through the influence of the same peripheral irritation on this nerve.

"The dilatation of the cardiac orifice of the stomach, which occurs as a preliminary to vomiting, is, like the inhibition of the heart's action, here caused in a reflex manner, by impulses descending the vagi. Great dilatation of the orifice, manifested by a sudden large gush of vomited matter, is then a sign of a powerful descending influence; a sudden stoppage of the heart's action in diastole is also produced by a similar impulse.

"It cannot therefore be a matter for surprise, that death should so often occur, in this manner, in cases of acute intestinal obstruction; and we may surely expect to meet with this association of vomiting and sudden heart-failure during, as well as before and after the administration of anæsthetics."

In conclusion, Dr. Gunn hopes that his experience may be of some service to the profession, by showing how far his statistics explain the liability to after-sickness, and by endeavouring to dissipate the popular dread of anæsthetics.

DISCUSSION ON THE THEORY OF CARIES.*

THE PRESIDENT (Dr. Joseph Walker) then called upon Mr. Henry Sewill to open the discussion on the "the Theory of Caries," of which notice had been given on the Agenda paper.

Mr. SEWILL said that, as in any debate of this kind it was most important that the exact nature of the subject to be discussed should be clearly understood, he would commence by reading the question which had been decided upon by the Council to serve as a basis for the discussion. It was as follows:—"Do the incontrovertible facts which we now

* This discussion on a paper, read before the Odontological Society, by Dr. Alfred Carpenter (see p. 99 and following issues), is of such an interesting nature that it will be printed *in extenso*, notwithstanding that a summary has already appeared.—Ed.

possess as to its etiology and pathology fully account for the phenomena of dental caries?"

In his opinion there was no doubt that this question should be answered affirmatively. He believed that we now possessed a store of facts amply sufficient to account for all the essential phenomena of the disease. It was true that caries had been for many years successfully treated without any theory at all. It might therefore be asked by some what practical good was to be expected of such a discussion as the present. But though the treatment which had been empirically followed had certainly been fairly successful, still there was no knowing but that it might be modified with advantage could we be certain of the true nature of the disease. Whilst as to the *prevention* of caries, towards which little had been done as yet, this must depend almost entirely on our knowledge of its etiology and pathology.

Considering the importance of the subject—for caries was by far the most important of all Dental diseases—it was remarkable that the question had remained so long unsettled. Even quite recently papers on this subject had been read before the Society based on somewhat astonishing physiological and pathological hypotheses. It had also been publicly stated by a member that no explanation could be given of the origin of caries; some even still asserted that it was a constitutional disease, &c.

The first point to be decided was whether caries was due to external or internal causes. After that it might be possible to consider what were its exciting causes, and what its predisposing causes; what was the exact nature of the morbid changes in the tissue, and whether the tissues showed any vital reaction during the progress of the disease, or were merely passive.

He had no hesitation in saying that caries must be looked upon as a disintegration of tissue due to the action of *external causes*. The anatomical characters of enamel and dentine appeared to negative the possibility of their being the starting point of pathological action; or if such a thing was possible in dentine, it could not be possible in enamel,—a densely hard, almost homogeneous mass, containing a mere trace of organic matter. And it was in enamel that caries commenced, unless it started in a fissure. If caries commenced in these tissues as a true disease, we should certainly expect to find at an early stage some vascular disturbance of the pulp; but this never occurred. It was true that inflammation might occur in the cornea and other non-vascular tissues, but no gross lesion comparable to dental caries could take place even in the cornea, without vascular change. Nor were the

cornea and dentine parallel cases; the one was soft and permeable, the other dense and hard. Dentine was, indeed, as a tissue, unique.

It appeared to him there was one fact alone without those mentioned which effectually settled this question, viz., the fact that caries occurred in dead teeth and in artificial teeth made of ivory. It had been said that the vitality of the tooth would resist the action of external agencies. But though vitality might modify the process to some extent, causing pathological changes, it could not protect the tissues from the action of physical laws. A drop of nitric acid would destroy the skin, whether living or dead; and similarly acid would act upon a tooth whether living or dead.

What then were these external causes? One was *acid*. This was derived from the decomposition of food, from deranged secretions, acid mucus, &c. The minute phenomena of caries had lately been more fully cleared up by the investigations of Messrs. Underwood and Milles. They had found minute organisms flourishing in the organic matter of the dentine, and this accounted for the more rapid destruction of dentine than enamel. These organisms were of course introduced from without, and the chief point was that the whole process was due to the action of external causes.

Various objections to this view had been put forward, but these had all been satisfactorily explained. Thus it had been shown that the "translucent zone," which had at one time been thought to be a sign of "vital action," was equally well seen in dentine when softened by acid out of the mouth. So also with regard to the varicose condition of the dentinal fibres seen in carious teeth; these had also been shown to occur in dead teeth out of the mouth.

In the next place, what were the predisposing causes of caries? These might be shortly stated as anything which would be likely to render the enamel and dentine more easily acted on by acid; thus, fissures and other malformations of the enamel; soft porous enamel, and soft, badly formed dentine, containing interglobular spaces; crowding and irregularity of the teeth, favouring lodgment of decomposing *debris*, and interfering with proper cleanliness; and lastly, anything which tended to cause the formation of acid within the mouth, such as a bad state of the secretions, chronic dyspepsia, &c.

It had been asserted that the fact that the appearance of caries would sometimes date from an illness was a proof that the disease must be due to a constitutional state. But, in the first place, the change was not attended by any vascu-

lar phenomena, such as were met with in other lesions of constitutional origin, in whatever organ they might occur. And secondly, the condition of the mouth during many derangements of health, and many diseases, was eminently favourable to the existence of the local causes he had mentioned. In a case of typhoid fever, for instance, the teeth would be found covered with collections of vitiated mucus and partially decomposed food, which might remain for weeks; in pregnancy, as another instance in point, there was frequently a soft spongy state of the gums, with secretion of acid mucus, and often gastric derangement besides; in chronic dyspepsia the condition of things was somewhat similar,—unhealthy secretions, acid eructations, &c.

He did not pretend to speak as an authority who had made original investigations on this subject. He was only expressing his own individual opinions. But it did appear to him that the evidence in favour of the local origin of caries, and that it consisted of disintegration of the tissues without pathological phenomena of any kind, was almost overwhelming. He thought it was impossible for any one who read carefully through the masterly summary which was given in Messrs. Tomes's work, based on original research, to continue in doubt on this question. The conclusion arrived at by these authors was that caries had, properly speaking, no pathology.

The well-known work of Wedl also gave a most philosophical and judicial review, based on original investigation, of all that was known on this subject. He described dental caries under the head of "Anomalies of the Secretions," and decided strongly against the existence of any inflammatory origin, or of any vital reaction in the tissues during the progress of the disease.

Leber and Rottenstein also furnished important corroborative evidence, though they were mistaken in ascribing to the action of leptothryx what was no doubt due to the action of bacteria and other organisms. Magitôt also had, by a careful series of experiments, shown that enamel and dentine were destructible in acids not stronger than those formed in the mouth. So also Westcott, Allport, Mantegazza, and last, but not least, Messrs. Underwood and Milles, had all produced important evidence to show that caries was due to ordinary physical causes acting from without.

In his desire to be brief, he had left out all reference to several most important points bearing on this question; but he knew there were other members ready to take part in the discussion, and that some of them were more competent to deal with these matters than himself. He hoped that the

Society would be willing to discuss the question thoroughly, since this might possibly have the very desirable result of removing, to a considerable extent, the state of uncertainty in which it has long remained.

Mr. A. COLEMAN said Mr. Sewill had started with the proposition that, inasmuch as Dental caries commenced on the surface, and was due entirely to external causes, it was not a disease. But if they accepted that definition, they would have to exclude from the category of diseases many morbid conditions which had hitherto been included within it. Thus, some of the skin diseases, ringworm and favus for instance, commenced on the surface, and were due entirely to external causes. It was true that in the progress of these diseases inflammatory conditions were manifested, and that such conditions had not been clearly demonstrated in dentine during the progress of dental caries. It was hardly to be expected that such manifestations could be made apparent in a structure of such a character, but the fact must not be ignored that some investigators maintained that such changes could be shown. Putting aside the disputed nature of the "translucent zone,"—claimed, however, by Magitôt, a strong advocate of the chemical theory of caries, as an evidence of vital action in the dentine,—there were the researches of Dr. Frank Abbott, who demonstrated that, in the enlarged canaliculi, granules and threads exist which took up carmine, whilst in parts further affected these were filled with partly-nucleated protoplasm. These phenomena might of course be explained as indicating the presence of organisms, originating from without, and which had found their way into canaliculi. But if this were so, what could be said in the case of caries occurring in cementum? He thought it could hardly be denied that we had found the same evidences of inflammatory action, shown by the presence of corpuscles, as appeared in bone during the progress of inflammation.

Mr. Sewill stated, with considerable confidence, that precisely the same conditions occur in the decay of dead teeth as in that of living teeth. Now this was a point upon which all were not agreed. Dr. Frank Abbott stated distinctly that the appearances presented under the microscope were not the same in the two cases; and he (Mr. Coleman) would also say that, in his opinion, there were differences in the general appearance and conditions met with in each. In the case of teeth attached to artificial dentures, the softening of the dentine was more general and superficial, and the enamel was more friable than in the case of living teeth affected by caries. It was also his opinion, founded on long observation,

that dead teeth and teeth that had their pulps devitalised, when attacked by decay, ran a more rapid course, and that the softening was less circumscribed than in teeth with living pulps.

That the appearances presented by decay in dead teeth and the condition termed caries in living teeth, should, in the parts actually affected, present very similar appearances, was what the advocates of a vital theory would strongly maintain. Those who believed that a healthy living tooth possessed an inherent power, which protected it from external chemical influences, would admit that a tooth attacked by caries had lost that power, or that it had been overcome in that part which had become affected by the disease.

With regard to the external influences which might, directly or indirectly, determine caries, an acid state of the secretions of the mouth was no doubt an important factor. But if it were the sole cause, would not the result be a more general action upon the teeth? as had, indeed, been pointed out by Hunter. And then, with regard to the evidence of this acid state of the saliva, he had himself, many years ago, made a very large number of observations upon this point, expecting to be able to connect an acid condition of the saliva with, at all events, very active or acute cases of caries. But he obtained no such result. In cases of pregnancy and those convalescent from the exanthemata, the conclusion was the same, and yet in such cases it often occurred that teeth which, until these conditions supervened, had been excellent, then underwent very rapid decay. This had led him to doubt very much a simply acid cause for caries, and had brought him to believe that the greater liability to disease in such cases arose from a lowering in the power of resistance of the teeth to agencies external to them—that is to say, to the ordinary laws of chemical affinity.

The usual hour for adjournment having arrived, the PRESIDENT suggested that, as no doubt there were many other members anxious to state their views on this question, it would be a pity to attempt to finish the discussion that evening, and he would put it to the meeting that it be adjourned till next month.

This having been agreed to, the PRESIDENT announced that on March 5th a paper would be read by Dr. Thorowgood, the title of which he could not then announce, and the discussion begun that evening would be resumed.

The meeting then terminated.

At the meeting of June 4th, the PRESIDENT re-opened the discussion on the "Theory of Caries," adjourned from the February meeting.

He said he had received letters from several members and others, who took an interest in the subject, regretting their inability to attend the meeting that evening. He had made some inquiries with reference to the prevalence of caries in the teeth of animals, thinking that possibly by this means some light might be thrown upon the cause of its prevalence in man, and would read two letters he had received relating to this aspect of the question. One was from Mr. Robinson, Principal of the Royal Veterinary College, Camden Town. He said, "I am satisfied that, during the last ten years, diseases of the teeth of the horse, chiefly caries, have been much more generally recognised than formerly. Whether because skilled attendants have been now employed, or because disease of these structures has been more frequent, may be difficult to tell. This accession of Dental disease applies particularly to rural districts, where the probabilities are that river water is largely used for drinking purposes." Mr. Thos. Walley, of the Edinburgh Veterinary College, replied as follows:—"In reference to your query as to the prevalence of caries in the teeth of horses, I may say that it is not at all common, nor has it been so during the last ten years, in this part of Scotland. I am told, however, that in the North it occurs with comparative frequency. As all animals here are supplied with water from the common reservoir, I cannot say anything about the influence of hard or soft water in its production."

With regard to his own opinions on the subject under discussion, he thought that Mr. Sewill deserved the thanks of the Society for the way in which he had brought forward facts which have been established by Messrs. C. Tomes, A. Underwood, and Milles in this country, and by many distinguished investigators on the continent of Europe, and in America; but at the same time he thought that Mr. Sewell had scarcely given sufficient prominence to certain other facts which, in his (the President's opinion) appeared to be quite as well worth consideration. All would admit that caries was, to some extent, an effect of external causes, that it was due to the solvent action of acids generated by fermentation going on in the mouth, and that bacteria and micrococci played a most important part in accelerating the rapidity of caries, if not actually an active agent in its production. Messrs. Charles Tomes and Milles had kindly undertaken to speak that evening, and they would explain their views on this point. But if the acidity of fermentation was the only cause of caries, how could the fact be explained that Dental surgeons were daily seeing caries arrested;—a black polished surface on one tooth, whilst its neighbour was fast crumbling

away? "There can be no question," said Mr. Charles Tomes, in his well-known work, "that the tendency to caries, whether induced by structural deficiencies or perverted functions, is strongly inherited. This inherited predisposition, so strongly marked in families, extends to whole races, and is probably due to defective development." Whilst Dr. Hitchcock states, with reference to immigrants into the United States, that the typical characteristics of races are usually effaced after the lapse of two generations, the descendants possessing all the peculiarities of, and their teeth being apparently as liable to caries as the teeth of native Americans. This, again, would point to defective development as being the cause of caries, and probably, also, to some endemic cause for this defective development.

It had been shown by Coleman in 1862, by Rottenstein in 1868, and by Charles Tomes in his work, published in 1873, that the various acids act on the Dental tissues each in a manner peculiar to itself, but none of them decomposes either of the Dental tissues in a similar manner to caries. Moreover, the presence of these acids in the oral cavity was nothing new. Hence to account for the existing frequency of Dental caries we must again fall back upon defective development. This might be due to a deficiency of mineral salts in the food, either from the quality of the water supply, or from deficiency of fresh vegetables, or the removal of the husk from cereal food; or it might arise from undue excitement and irritation of the nerve centres during the development of the Dental tissues. Some information as to the relative importance of the water supply, errors in diet, or the influence through the nerve centres of the excitement of the present age in the production of caries, might be obtained by a careful study of the occurrence of the disease in domestic animals. There could be no doubt also that congestion of the mucous membrane favoured the occurrence of caries, and that successful treatment of this condition would greatly diminish its frequency.

(To be continued.)

SALIVA.

BY HARRY BALDWIN.

(Continued from p. 658.)

4. CHEMICAL PROPERTIES AND CHEMICAL USES.

The most important chemical property of saliva is that of converting starch into sugar of some form, and is called its amylolytic power. The sugar formed by saliva from starch is

of two varieties,—viz., *glucose* or *grape sugar* and *maltose*. That form of sugar we are so familiar with, and which is obtained from the beet-root or sugar-cane, and called cane-sugar, is never formed by the action of saliva on starch, but differs from glucose or maltose in a number of chemical reactions. Glucose and maltose, which are the sugars produced by the action of saliva on starch, have the power of reducing copper salts, so that when a solution of one of these sugars is boiled with a solution of sulphate of copper, known as Fehling's solution, the blue colour of the sulphate of copper is changed to the orange red of cuprous oxide. Starch has not this reducing power. I shall now prove that saliva has the power of converting starch into sugar by testing for sugar in a mixture of starch and saliva. In this test-tube I place some starch mucilage, and now some saliva. We will wait a little to give the saliva time to act on the starch, and meanwhile warm it slightly over a spirit lamp to bring the mixture to something near the temperature of the body.

Iodine produces with starch a blue colour of iodide of starch, but no colour is produced by iodine with sugar. While the conversion of starch into sugar is going on the addition of iodine often produces a red or violet colour, due to the presence of a body called dextrin, through which form starch passes on its way to become sugar. When the conversion is complete no colour at all is produced by iodine.

The mixture of starch and saliva in the test tube is now ready for testing for sugar. I add about an equal quantity of Fehling's solution and now boil all together. The blue colour you see is changing to red. The red colour is now fully developed. This proves the saliva has acted on the starch mucilage and changed it into sugar.

The conversion of starch into sugar is not instantaneous, as was at one time supposed. The experiment which was adduced to prove the instantaneous conversion was this:—Drop into saliva, drop by drop, a solution of starch which has been coloured blue by iodine; and as each drop enters the saliva it is decolourized. It was thought that in this experiment the saliva instantly changed the starch, of the iodide of starch, into sugar, but the real explanation of it is, that the saliva converts the iodine, of the iodide, into hydriodic acid by oxidation. Many other organic fluids, widely differing from saliva, will do the same thing. The fact is, starch is not instantaneously converted into sugar; some time being necessary for the process. On this account mastication should be prolonged and thorough, and to this end you know it is necessary to have good teeth, natural or artificial.

The preceding experiment shows that starch does not afford

a reliable test for sugar in the secretions in cases of iodism, as the very fluids tested (milk, urine, etc.) have the power of converting the iodine into hydriodic acid, which destroys the blue colouration with starch. The amylolytic action of saliva is altogether destroyed by a high temperature, such as the boiling point, and is suspended, though not destroyed, by a very cold one, such as the freezing point. The action is most energetic at a warm temperature—viz., about 100° F., or that of the body.

We have now to consider the influence of *acids and alkalis* on the amylolytic power of saliva. It is found that dilute acids of about the same degree of acidity as normal gastric juice do not arrest it; stronger acids do, but if neutralized the action recommences. As a great part of the starch we eat passes into the stomach before being transformed into sugar, it is comforting to know that the acidity of the gastric juice does not arrest the process. In some unhealthy states of body the gastric juice is abnormally acid, so much so, as to stop the conversion of starch into sugar, but, on passing into the intestines, where the secretions are alkaline, the process again goes on.

Caustic potash, or soda, permanently destroys the power of saliva on starch; the power not returning on neutralization. Carbonate of soda and potash, ammonia and lime water, suspend the action, but it is again taken on if the solution is neutralized.

Starch mucilage and other forms of cooked starch are comparatively rapidly converted into dextrose and maltose by saliva; but raw starch, as obtained from the raw potatoe, is acted on but slowly by it. A part only of raw starch is transformed by saliva. This happens because each starch-granule is composed of layers of two different substances—viz., starch-cellulose and starch-granulose, and the saliva acts only upon the granulose. The layers of these two substances are arranged eccentrically around a point near one end of the grain, which point is called the *hilum*. Before the saliva can act upon the layers of granulose it has to permeate a corresponding number of layers of cellulose, over which it is inert. If sufficient time is allowed, saliva will convert all the granulose of raw starch into sugar and will dissolve it out, but still the grains will retain their characteristic form on account of the unaltered cellulose. Cellulose is not coloured blue by iodine, granulose is.

The amylolytic properties of saliva used a short time ago to be thought to depend on the ptyalin of Berzelius, the process for obtaining which in appreciable quantities I have given above. Now, however, it is found that by elaborate methods, liquids

can be obtained from saliva almost entirely free from proteid material, and yet which are intensely amylolytic; but even these probably contain other bodies beside that which is the really active constituent. Instead of the active principle being obtainable in appreciable quantities, the fact is, that it exists in such extremely small quantity, that it has never been satisfactorily isolated, and really the "only evidence there is of its existence is the manifestation of its peculiar powers." This seemingly untangible body has also received the name *ptyalin*, or *saliva ferment*. That it is a ferment is proved from the following considerations.

"1st. Its presence in minute and almost inappreciable quantity.

"2nd. The close dependence of its activity on temperature.

"3rd. Its permanent and total destruction by a high temperature and various chemical reagents.

"4th. The want of any clear proof that it itself undergoes any change during the manifestation of its powers; i.e., to say the energy necessary for the transformation which it effects *does not come out of itself*; if it is at all used up in its action, the loss is rather that of simple wear and tear of a machine, than that of a substance expended to do work."

The action which it induces is that of splitting up a molecule with assumption of water; this causes it to belong to the catalytic agents, and to that particular class of catalytic agents known as *hydrolytic*.

Ferments are of two kinds, *organized* and *unorganized*. Saliva ferment is an unorganized ferment. Yeast is an example of an organized ferment. The yeast ferment consists of microscopic vegetable, fungous cells, which are endowed with life. The transformation of sugar into alcohol and carbonic acid gas, in yeast fermentation, is dependent on the life and activity of the yeast-plant. If the yeast-plant die, the fermentation ceases. The saliva ferment cannot be observed by means of the microscope, as can the yeast ferment, and it further differs from the yeast ferment in being able to pass through the pores of a filter paper, yet in all other respects its behaviour is just what would be expected from an organized living ferment.

The change brought about by the saliva-ferment in starch, causing it to become sugar, is merely one of hydration, i.e., the starch molecule takes up a molecule of water, and thus becomes sugar.

In man, as well as in the pig, guinea-pig and rat, both parotid and submaxillary saliva are amylolytic, but the submaxillary more than the parotid. In the rabbit the submaxillary saliva has scarcely any action, while that of the

parotid is very active. Cat's saliva is weak in its action, dog's more so. The saliva of the horse, sheep and ox are extremely feeble. It is the rule for submaxillary saliva to be more powerful than parotid, we have seen an exception to this in the rabbit; the parotid saliva of the dog is wholly inert.

M. Gautier has recently been investigating the action of human saliva when injected subcutaneously, and he finds that the poison of serpents (which is the secretion of a salivary gland homologous with the parotid) differ from human saliva in the intensity of its action rather than in essential nature. He obtained a substance from human saliva, which, injected under the skin of a bird, had remarkable toxical effects. The bird was almost immediately seized with trembling; it staggered and fell down in a state of coma and complete stupor, and expired in half an hour or an hour, according to the quantity of the substance and the vigour of the bird. The phenomena produced resembled fully those following the bite of a venomous serpent. The poison of saliva is supposed to be an alkaloid, and is not a virus, because its poisonous properties are not destroyed when it is heated up to the boiling point. The poison of the cobra, when greatly diluted and injected under the skin of a small bird, such as a chaffinch or sparrow, kills it in 5 to 12 minutes. Stupor and coma first attack the creature, then comes a period of excitation with convulsions and tetanic contraction. There is a passage somewhere in Rabelais in which the poisonous nature of human saliva is recognized, and in this country a human bite is looked upon, by some people, with grave apprehension.

The chemical use of human saliva is merely the one, given above, of converting starch (which is insoluble and so incapable of being absorbed into the system) into sugar, (which is soluble and therefore is capable of being absorbed into the system). It has no power over albuminous, gelatinous, fatty, or other food stuffs

5. CIRCUMSTANCES GOVERNING ITS SECRETION.

Saliva is not secreted in a continuous flow, but intermittently, as is required by the occasion. A small quantity is probably constantly being poured into the mouth from the parotid gland, when fasting, just sufficient to keep the mouth moist. When food is taken the flow greatly increases in amount. For this increase of flow it is not essential that food be taken into the mouth, for the very thought of it, a savoury smell, or even the movements of the muscles which are used in mastication, are quite sufficient to provoke it. Moreover, active secretion is started if food be introduced directly into the stomach through an artificial opening; also in nausea &

copious flow is induced through events which are occurring in the stomach. Thus it will be seen the salivary glands are called into activity by indirect means. These indirect means have their power by what is called reflex action in the nervous system. For reflex action to be possible it is necessary to have a nerve centre and two nerves, one of these nerves, which shall convey a primary impulse to the nerve centre, and therefore called the *afferent* nerve, and the other nerve which shall convey the impulse back from the nerve centre to the part where the effect is to be produced, and therefore called the *efferent* nerve.

The nerve centre for reflex actions concerning the salivary glands is situated in the *medulla oblongata*, close by the vaso-motor centre.

The afferent nerve, whose stimulation stirs up the *parotid* gland into activity, is chiefly the glosso-pharyngeal, or nerve of taste, and the efferent, or motor-nerve, is chiefly the small superficial petrosal. The sympathetic nerve has a great influence over the parotid gland, causing it, when stimulated, to eliminate a greater amount of organic matter, but not a greater amount of fluid.

In the parotid of the dog stimulation of the cerebral nerve (auriculo-temporal) produces a flow of thin, watery saliva, but stimulation of the cervical sympathetic excites the gland to a constructive activity, resulting in the formation and storage-up of organic material. Then after stimulation of the sympathetic, if the cerebral nerve be stimulated, a copious flow of saliva is provoked, which is especially rich in organic matter. In this case, stimulation of the sympathetic gives rise to the formation of certain substances which remain in the gland, and which are, as it were, washed out by the watery saliva called forth by after-stimulation of the cerebral nerve. A similar state of things will be seen to exist as regards the submaxillary gland. These and other facts lead Prof. Heidenhain to the conclusion that the secretion of water and salts on the one hand, and organic matter on the other, are two separate acts of the cell, and under the control of two different sets of nerve fibres—the secretory and the trophic respectively.

The chief afferent nerves for the *submaxillary* gland are the glossopharyngeal and lingual, and the efferent or motor nerve is the chorda tympani. Stimulation of the chorda tympani produces, in the dog and rabbit, a copious flow of thin limpid saliva, and stimulation of the cervical sympathetic a scanty flow of thick viscid saliva. The “chorda tympani saliva” of the rabbit contains only 1 to 2 per cent. of solids, whilst the “sympathetic saliva” from the same gland con-

tains $3\frac{1}{2}$ to $6\frac{1}{2}$ per cent., the greater amount being organic matter.

The *sublingual* gland has not been the subject of much experiment as regards its nervous mechanism.

The submaxillary ganglion used to be given, in books, as a nerve centre for reflex actions affecting the secretion of the submaxillary gland, but there is no experimental evidence to prove that it is so.

One of the commonest reflex actions causing secretion from the submaxillary gland is brought about in this way (for example)—food is taken into the mouth; this by its flavour excites the terminal branches of the glosso-pharyngeal nerve supplied to the base of the tongue. This nerve immediately conveys the stimulus to the medulla oblongata. This nerve-centre instantly reflects the impulse along the chorda tympani nerve, whose branches are distributed to the submaxillary gland. The gland cells under this stimulation at once commence to secrete. Special nerves have been given above as the chief ones concerned in the reflex actions of saliva-secretion, but almost any nerve in the body may act as an afferent nerve causing saliva-secretion. Irritation of the dental nerves causes often a very copious discharge of saliva from the parotid, if not from the other salivary glands. The truth of this is apparent from the fact that, when in preparing a cavity of caries in a tooth preparatory to filling, the excavator or burr is used on sensitive dentine, the mouth immediately becomes much more watery than it was previously, and with a cessation of the cause of irritation the hyper-secretion ceases. This was very apparent to myself, some time ago, when preparing a cavity. I was holding back the patient's left cheek with the middle finger of my left hand, so that the orifice of Steno's duct was just above my finger. When I commenced to give the patient pain by burring sensitive dentine, the thin saliva from the parotid ran along my finger and dripped off the end of it into the mouth; the drops falling in such quick succession as almost amounting to a continuous stream. When I discontinued the burring the dripping ceased, but only to commence again each time I burred, and again to cease each time I left off. The increase of flow is especially noticeable when excavating sensitive teeth in the lower jaw, particularly molars, but perhaps only because it then causes the operator more inconvenience. I may here remark that the salivary glands of children do not begin to be functionally active till the age of about six months. Mr. Coleman says this shows children ought not to be given starchy food, such as corn flour, before this age, as they are not able to digest it.

6. MANNER IN WHICH IT IS SECRETED.

There is now to be considered the manner in which the salivary gland-cells manufacture their special secretion from the blood.

No part of the salivary secretion is merely filtered off from the blood. It is all secreted through the agency of the vital activity of the cells. The reasons for this assertion are:—1st, in the salivary glands there are no bodies analogous with the Malpighian tufts of the kidney, which are supposed to passively filter off a large amount of the fluid of the urine, while the cells of the salivary glands are quite analogous with the secreting cells of the kidney; 2nd, when *atropin* is given not only do the specific constituents of saliva cease to be eliminated, but the discharge of water is also arrested and no saliva leaves the glands at all; though an increased amount of blood passes through the gland in consequence of the vessels becoming dilated; 3rd, the pressure of saliva in the gland ducts may considerably, if obstructed, exceed the pressure of blood in the arteries, even the carotids.

If a specimen of a living salivary gland at rest be examined under the microscope, very important differences are at once apparent as compared with a specimen of a living gland actively secreting. In both cases the large epithelium cells are seen nearly filling up the tubules. The cells of the resting gland have their boundaries very dimly discernible, and the lumen, or passage between the cells, almost if not entirely closed. The cells are entirely filled with granules, or if not entirely filled, they are so excepting a small zone at the outer part. The cells of the actively-secreting gland, on the other hand, have their outlines distinct, the lumen between them more widely open, and the granules in much smaller quantity than in the resting gland. The granules will be in smaller and smaller quantity in proportion to the length of time that the cells have been stimulated, and to the intensity of the stimulation. After very prolonged stimulation, when the gland is by that means exhausted, the granules will have disappeared almost entirely, only a few remaining at the extreme inner margin of the cells next to the lumen. After stimulation the cells are smaller than after a period of rest, but their nuclei are round and large. Somewhat different appearances are seen in specimens which have been prepared by hardening in alcohol. In these the cells after active secretion look cloudy and opaque, similar to the appearance the resting cells present in the natural state. This difference is supposed to be caused by the alcohol precipitating a certain substance within the cells and so destroying their transparency.

From the appearances of the living cells, it is plain that

during rest something is stored-up within them, in the form of granules, and the cells are enlarged and distended thereby; but during activity the stored-up material disappears, *i.e.*, it is discharged in the form of secretion. It is found by further experiment that the substance stored-up in the cell is not identical with anything found in the secretion, but it is *easily convertible* into the actual specific ingredients which *are* found in the secretion. Thus, in a gland which secretes mucus, the granular substance stored-up in the cells is called *mucinogen*, because by a slight chemical change it becomes *mucin*. All that is necessary to cause the mucinogen to change into mucin is that a nerve stimulus should be applied to the cell containing it. In secretion this is actually what occurs. Under a nerve stimulus, the stored-up material in the cells of the salivary glands is converted into the actual ingredients of the saliva and then ejected. As matter is thus ejected the constructive protoplasm of the cell is roused into activity, and fresh amounts of the intermediary substance is elaborated from the fluid part of the blood, and stored-up in the cell. The intermediary product is in its turn changed into the actual ingredients of the secretion and ejected. Thus the process is maintained. When the flow is continuous, the constructive protoplasm at the outer part of the cell is manufacturing the intermediary product from the blood, while the intermediary product is being changed into the actual ingredients of the secretion, and then being discharged from the inner side of the cell into the lumen.

Prof. Heidenhain explains the *modus operandi* of the discharge of water in this manner—the protoplasm of the cell has a strong affinity for water, and therefore imbibes it from the fluid part of the blood till a state of equipoise is attained; “excitation of the secretory nerves induces a change in the molecular arrangement of that part of the protoplasm next to the lumen of the tubule. In consequence of this alteration of molecular arrangement there is a diminished resistance to filtration in this part. Water consequently escapes; the out-flow being perhaps maintained or increased by contraction of the protoplasm, as has actually been observed by Kühne in the cells of the pancreas under the microscope. The tension of water in the cells falls below the imbibition power of the protoplasm so that a current sets in from the capillaries. An escape of water from the inner surface, and absorption through the outer surface of each cell continues as long as the protoplasm continues to contract under nerve influence.”

(To be continued.)

British Journal of Dental Science.

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WHILST Dentistry continues to advance with giant strides, and the benefits it confers on suffering humanity are almost universally acknowledged, it is impossible to conceive the obtuseness and indifference displayed by many of our public bodies, as to its value.

Besides our own special hospitals, the Dental Surgeon is now an important member of the staff of all our larger general hospitals, and all our schools and institutions imperatively demand and gratefully confess his valuable services, the inmates of our large pauper establishments, almost alone, are deprived of his aid. A member of the board of one of these huge establishments—containing 600 children, varying in age from six to sixteen—at a meeting of their body, proposed that a properly qualified Dental Surgeon should be appointed to their institution. This gentleman, after having, with great skill and emphasis, pointed out the obvious advantages accruing to them from such an appointment, was met with strenuous opposition by his brother members; but let us quote his own words: “I regret to say my motion was not carried and I was told that the *matron* always exercised a *wise supervision in calling the doctor’s attention to all cases* requiring his aid. We are fortunate in having a doctor who gives the greatest attention to the *health* of the inmates, but with 600 children it is hardly fair he should incur the trouble and responsibility of stopping and extraction. I was met with another curious objection to my motion, that we ought to pay our chaplain better for the work he did, than to think of spending £30 or £40 a year for *such a thing as teeth*.”

“If a Dental Surgeon is necessary in all our private institutions, how much more is he required in our pauper

establishments where children are sent into the world without friends?"* How much of human misery and suffering might be obviated, and how many useful teeth might be preserved for future use, to the certain increase of health and strength—and so probably, in the long run, to the easement of the poor-rates—by the timely aid of the Dental Surgeon in detecting and remedying the early predisposing causes of caries, and by his careful supervision, especially during the troublous period of the secondary dental eruption, it is impossible to over-estimate.

But the practical point to be considered is who would remunerate the Dentist for his services? Whilst most would be found to admit the utility of the appointment, but few, we fear, would voluntarily contribute to its efficient administration.

We allow our boasted philanthropy to expend itself on unworthy or frivolous objects, whilst our pauper children suffer in our midst. No great social revolution was ever effected without opposition, but the change is near at hand; and we look forward hopefully, for the time, when *even* Boards of Guardians will recognize the necessity for the Dentist, and fully appreciate the value of his services.

It is with great pleasure we announce the munificent generosity of Sir Edwin Saunders, Dental Surgeon to H.M. The Queen, who has presented the leasehold premises, No. 39, Leicester Square, adjoining the Dental Hospital of London, value £2400, to the authorities of that institution for the purpose of its enlargement, which we feel sure must proportionately increase the usefulness of the institution.

A FATAL case of poisoning by hydrochloric acid is reported from Wishaw—where the wife of a plate-layer drank some of the fluid in mistake for whisky—after lingering for a fortnight, she succumbed to the effects of the irritant, death occurring somewhat suddenly.

At the discussion lately held in the Paris Académie de Médecine, concerning bichloride of methylene, which Sir Spencer Wells considers preferable to chloroform, M. Reg-

* See letter on "Dental Supervision of Pauper Schools," from the "Lancet," on page 727.

nauld said he examined several specimens, and found that certain products sold under that name in Paris were nothing but chloroform. Others coming from England were a mixture of chloroform and methylic alcohol. It is therefore well to be cautious when trying the therapeutic effects of these products.

M. Regnauld said it was interesting, from a commercial point of view, to note that the kilogramme of the mixture costs in London 38 shillings, whilst chloroform may be had in Paris for 8 shillings.

MR. DE WALTERVILLE has just been appointed physician to a new Electro-therapeutic department at St. Mary's Hospital, the first of the kind created in this country.

SCHAFF recommends iodoform in toothache on account of its gently caustic action as an anodyne application to exposed nerves. The circumstance that a single or repeated application of iodoform does not produce any irritation, much less any inflammation of the periosteum and the double function of the remedy as a cleansing and disinfecting agent, makes it especially appropriate as a caustic, particularly before the introduction of a temporary filling. The author uses a paste of the following composition:—

R Iodoform	.	.	.	.	60 grains.
Kaolni	.	.	.	.	60 "
Carbolic acid	.	.	.	.	8 "
Glycerine	.	.	.	.	9.5 "
Oil of peppermint	.	.	.	.	10 "

Triturate the iodoform, kaolni, and oil of peppermint with enough glycerine to form a thick paste.

"THERE is nothing very brilliant about our Bremen Dentists," said a lady to a member of the profession in Berlin, "but they are very obliging. If you wish a tooth extracted with gas, they forthwith light the chandelier."

A WELL-INFORMED author estimates the number of teeth which are annually extracted in the United States at 20,000,000, and the number of artificial teeth used in the same period at 8,000,000.

IN the German Empire there are 2500 cities with a population varying from 5000 to 50,000, without a Dentist.

This list does not include the cities with a population below 5000, which, taken collectively, number 6,000,000 people; in these there are but seven Dentists to do the work.

As an average we find in Germany, in cities above 50,000, one Dentist to every 19,000 persons; in cities between 20,000 and 50,000, one to 20,000; and in cities between 5000 and 2000, Dentists are in the proportion of one to every 92,000 of the population.

Now that the holiday season is at its height, and many of the profession are enjoying their well-earned rest, it may be well to know, by many who are deterred from enjoying a trip at sea, by the dread of *mal-de-mer*, that Bromide of Sodium in 10 gr. doses, three times a day, gives more relief than any remedy yet introduced for sea-sickness. The attacks entirely subside, the appetite improves, and the patient is able to walk about with comfort. Of food there is none to equal *curry*, it is retained by the stomach when all other food is rejected. In cases of great prostration stimulants, of which champagne is by far the best, are frequently indicated, but they should be administered sparingly.

Manipulative Miscellany.

All instruments or articles wished to be described under this heading are requested to be sent for *inspection* to the publisher not later than the 8th and 23rd of each month, they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits, and without any intention or wish to pit one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

WALKER'S AUTOMATIC STEAM GAUGE GAS REGULATOR.

Mr. WALKER, of Birmingham, has made a new description of steam gauge gas regulator for the automatic control of vulcanizing. It consists of a large-sized circular steam gauge of the ordinary type, having a long indicating hand centred near the base of the gauge and moving along a graduated arc, indicating the pressure by a thermal scale. Below this arc is a slit cut through the face of the dial, through which, and attached to the indicating hand, is a flat plate of metal moving with the hand. The gas is allowed to enter the gauge itself by a tube fixed in the back, and also at the back is an outlet-tube, which can be turned with the finger and thumb; the inner end of this tube is so bent that it runs in the same slit under the graduated arc, where it can be seen. By setting this tube at any degree required for

vulcanizing it is in such a position that when the indicating hand reaches that point the flat metal disc covers the end of the tube, and so shuts the gas sufficiently off to regulate an even temperature.

The apparatus is both simple and efficient, and has no delicate parts to get out of order beyond those connected with its pressure measuring. We are indebted to Mr. Rutterford for the opportunity of examining this gauge.

DR. PIEREPONT'S NEW-SHAPED TOOTH-BRUSHES.

DR. PIEREPONT has designed a very useful pair of tooth-brushes, the one for the inside and the other for the outside of the teeth. By the special curves of the handles and lengths of the bristles, which are notched, so that when in position they embrace every tooth on one side of the mouth. By using them with an upward and downward motion, the nicks and interstices can hardly escape being thoroughly cleaned, and we should think they will prove most useful in assisting to preserve teeth.

Literary Notices and Selections.

A HISTORY OF DENTISTRY FROM THE EARLIEST PERIOD TO THE PRESENT TIME.

By GEORGE H. PERINE, D.D.S., New York.

DENTISTRY AMONG THE ANCIENT EGYPTIANS, ARABS, AND GREEKS.

IN preparing a history of any art, it is a time-honoured custom for the writer to search for its origin among the crumbling ruins of Italy, Greece or Egypt. To the builders of the pyramids, and the occupants of the massive and enduring tombs, which arise upon every hand along the banks of the Nile—silent and sad reminders of man's mental and physical power and brief existence—we naturally turn for the germ which has developed into an art or science of vast magnitude and utility at the present day. Historians have left us but limited material from which to cull facts with which to open a history of this character. Among the rude carvings and pictures of antiquity we find but little suggestive of Dentistry, although in the ruins of Pompeii and Herculaneum, and the buried cities of the western hemisphere, Dental instruments,

somewhat resembling those in use at the present day, have been discovered.

Herodotus, who lived five hundred years prior to the beginning of the Christian era, and was the oldest Greek writer whose works are extant, and the first among ancients to refer to the teeth in connection with the healing art, informs us that in his day there were in Egypt those who practised certain specialties in medicine. Some turned their attention solely to the treatment of the eyes, others to the head generally, and some to the teeth only. An examination of the teeth of mummies fully confirms Herodotus' statement, for it proves to us beyond a doubt that Dentistry was practiced—and by no means indifferently—by the ancient Egyptians, who were likely the first to give it attention as a specialty. Both filled and artificial teeth have been found in the mouths of mummies, the cavities in the former stopped with gold, and in some cases with gilded wood. Whether these fillings were inserted during life for the purpose of preserving the teeth, or after death for ornamentation, it is of course impossible to say. That the Egyptians were exceedingly fond of embellishing their persons with gold ornaments and bright-coloured materials is a fact which has been clearly established, and the discovery of mummies—of exalted personages, no doubt—some organs of which were gilded and embellished with showy colours, proves that their fondness for display accompanied them even into the grave. Generally speaking, the teeth of Egyptian mummies have been found to be in a comparatively sound state; hence, it is likely the Dental practitioner in the land of the Nile not infrequently experienced a sad lack of patients, and the encouragement he received consequently for the practice of his profession was limited. The teeth of a female mummy, purchased by M. Villoteau at Journey, on the Nile, proved to be all present, and although they were worn down apparently from old age, were without exception free from decay. At the present day the Egyptians are noted for their good teeth, which are remarkable for their durability, seldom failing with old age. The replacement of lost teeth appears to have been practiced from an early date by both Egyptians and Hindoos. Belzoni and others have found in ancient sarcophagi artificial teeth made from sycamore wood. It is also quite likely that ivory constituted a favourite material for the manufacture of teeth in the East, as it was so extensively used for various purposes by the people of that locality. Such artificial teeth as we refer to were probably held in place by ligatures, bands of cord, or gold and silver wire, which bound them to their natural neighbours.

Cicero, quoting from the "Law of the Twelve Tables,"

says: "Let no gold be used, but if any one has had his teeth fastened with gold, let it be lawful to bury or burn that gold with the body."

In the museums of Paris and Berlin may be seen artificial teeth of Egyptian origin. Joseph Mayer, F.R.S., of Liverpool, is the possessor of an extensive and highly valuable collection of antiquities, among which are two pieces of artificial Denture, one consisting of five teeth carved from bone, the other of two teeth of sycamore wood set in gold. Dr. Purland has also in his collection a tooth which was found pivotted to a stump in the head of a mummy.

Cases are related by Heradides, of Tarentum, and Herophilus, who practiced Dentistry about 300 years before Christ, of persons who have died from the effects of the extraction of teeth.

Hippocrates was born at Cos, 460 years before Christ, and was the first writer who refers to the use of the actual cautery in the removal of teeth (which practice was very likely borrowed from the Egyptians, whose preference for the use of heated iron, &c., is well known), compounded remedies for fetid breath, and removing discoloration from the teeth. He also explains how artificial teeth may be held in place by the employment of gold wire. His plan was, however, by no means original, for, as we have previously stated, the Egyptians undoubtedly resorted to a similar practice centuries before Hippocrates lived. That the ancients devoted particular attention to the care of their teeth may be inferred from the fact that not only Hippocrates but others, among whom we may mention Democritus and Mepalinus, made and used dentifrices. The former obtained his formula from a little book called "Pythicus," which was written in verse, and derived its name from its author.

Erasostratus is credited with having deposited in the temple of Apollo, at Delphi, a "leaden tooth-drawer," as an indication of his opposition to the practise of extracting teeth not loose enough to be removed with the fingers. Indeed, it would appear that extraction was an operation by no means in favour with the ancients. Judging from the bas-reliefs and frescoes found at Thebe and Memphis, the instruments employed in Dentistry in the early ages were decidedly primitive and clumsy. And in all cases where illustrations of Dental operations have been discovered, the instruments represented are huge engines of torture, while the suffering of the person undergoing the operation is clearly depicted.

The early lessons in physiology, and the principles of pathology as given us by Aristotle, have proved of much value, and have left us greatly indebted to that staid old student,

who lived 350 years before the beginning of the Christian era. Many of his principles are accepted at the present day, particularly those which have contributed toward the foundation of our profession. He was not, however, in his judgment or opinions infallible, as is proved by his assertion that man has more teeth than woman, and that the same difference exists between the sexes of various classes of animals; and, again, that the teeth increase in length during life, which marks the difference between them and other bones.

Celsus, who was a celebrated physician of Rome, was perhaps the first to recommend the file for the removal of caries of the teeth. His ideas regarding the treatment of the teeth were of an advanced character; indeed, he was the first to give scientific directions with regard to the extraction of teeth, which operation, however, he advised only in extreme cases. We find that he advocated the filing of decayed teeth, for which purpose he employed lead and other substances, and that he also advised the scarifying of the gums.

That comparatively little is found in the literature of ancient Greece and Rome, and still less in that of Egypt relating to the subject of Dentistry, is a fact by no means surprising, notwithstanding we have conclusive evidence that the specialty was extensively practiced, for the reason that the fundamental principles of the healing art were enveloped in a veil of mystery, or hid, as it were, beneath a halo of superstition. Practitioners were held in great reverence by the people generally, and in order to retain their power, which undoubtedly elevated them in the social scale, they guarded their knowledge with religious zeal. The secrets of the profession were handed down from father to son through generation after generation. From the law of Hippocrates we quote the following:

“Holy things are communicated only to the initiated; but they must not be trusted to the profane before they have been initiated into the orgies of science.”

That Hippocrates did not, however, follow to the letter his own precepts, is evident from the information he has given us of his knowledge and theories regarding the structure and origin of the teeth.

The opposition which existed among the Egyptians and Romans to such an extent against the operation of extraction, we find to be equally as strong with the Greeks and Arabs. Nowhere does Homer in his writings refer to it, which leads us to believe that it was rarely if ever performed in his time, although fillings are believed to have been not unfrequently made. In the Archæological Museum, London, are several skulls of ancient Greeks, the teeth of which contain a stone-

like filling. This fact furnishes strong evidence in favour of the impression which now exists regarding the practice of Dentistry in Greece in past ages.

The Arabs and Greeks were both strong advocates of the application of the actual cautery as a remedy for diseases of the teeth and gums, but the former people did not admit of the possibility of supplying the place of lost teeth with those of an artificial character, although there were not wanting practitioners who recommended their use.

Herophilus, also Erasistratus, gave the teeth much of their consideration, and made them the subject of many of their writings, and the discoveries they made and the knowledge they imparted to the world have proved of great value to science.

The operation of amputating an arm, which was made before the Alexandrian court and several medical experts of the time, and from which the patient recovered, established in the mind of Herophilus the opinion that a tooth could be extracted without danger or serious inconvenience to the subject of operation.

The Arabs adopted several methods for the removal of teeth without pain, but not, we opine, without injury to the victim of their practice.

Aaron, a physician who practised his profession in Alexandria, used for this purpose colycinth. The Romans also prepared various chemical preparations for disintegrating and destroying troublesome teeth, or causing them to loosen and drop out. And it is recorded by the Latin poet, Martial, that the Roman ladies wore artificial teeth and were by no means opposed to them.

Albucassis, an Arabian physician, who lived about A.D. 1100, was from all accounts the first to recommend the transplanting of teeth; hence, it is clear that this practice was comparatively of modern origin. The following which we quote from Pliny's Natural History, may not prove uninteresting :

"It is a matter beyond doubt that in young children the front teeth are produced at the seventh month, and nearly always those in the upper jaw first. These are shed in the seventh year, and are then replaced by others. Some infants are even born with teeth. Such was the case with Marius Curius, who, from this circumstance received the name of Dentatus; and also with Cer. Papirius Carbo, both of them distinguished men. When this phenomenon happened in the case of a female, it was looked upon in the time of the kings as an omen of some inauspicious event. . . . Some persons are born with a continuous bone in their mouth in the place of

teeth; this was the case with the upper jaw of the son of Prusius, king of Bithynia. The teeth are the only parts of the body which resist the action of fire, and are not consumed along with the rest of it. Still, however, though they are able thus to resist flame, they become corroded by a morbid state of the saliva. The teeth are whitened by certain medical agents. They are worn down by use, and fail in some persons long before any other part of the body."

That Dentistry constituted an acknowledged and important branch of medical science among the ancients is a fact clearly established, and that it was extensively practiced and by no means unsuccessfully, the records of the past which have been handed down to us, and the evidences which the tombs of those who lived in ages extremely remote to ours have yielded, furnish undoubted proof.

(To be continued.)

THE USE AND ABUSE OF AMALGAM.

By ALTON HOWARD THOMPSON, D.D.S., Topeka, Kansas.

(Concluded from p. 681.)

In practice it is the peculiar condition or quality of the cavities, or of the teeth, or of their surroundings, that indicates the superiority of amalgam to gold as a conserving material in given cases. For instance, in very soft, friable, or chalky teeth, accompanied by a permanent condition of acidity or ropiness of the saliva, superabundant mucus, lymphatic temperament, with, as is too often the case, a chronic habit of neglect of systematic cleansing,—it is madness and dishonesty to fill cavities in such teeth, especially when large and difficult, or upon the approximal and buccal surfaces of the posterior teeth with gold. Every candid operator will admit this proposition. It is better to fill every posterior or concealed cavity with amalgam, for it is particularly indicated in these teeth as the most serviceable conserving material. And why? Because the congenital softness, brittleness, and sponginess of the walls and margins of cavities in teeth of the class described will admit of a better joint—more nearly water-tight—being made with amalgam than with gold. The softness and elasticity of the walls will not possibly permit of perfect condensation of the gold against them, and leakage is inevitable; but the plastic condition of amalgam, taken with the advantage of slight expansion on hardening, for all amalgams do expand slightly, permits a more perfect coaptation, and a more nearly water-

tight joint is made. In addition to these advantages, as if to support and supplement the inherent weakness of the tooth and the difficulty of saving it, the ultimate oxidation of the amalgam will assist in its preservation, be it ever so soft, if the work is at all well done, by rendering the dentos more dense and less soluble. This oxidation is caused by the attack of the acids of the mouth upon the metals of the amalgam, where they expend their energy instead of attacking the weak dentos, thus creating oxides and sulphates, which permeate and harden the dentos. In this the amalgam performs a vicarious and noble duty, and the unsightly blackening becomes a blessing. But with gold the acids attracted by the metal, as all metals in the mouth do attract and condense acids, are concentrated upon the gold and attack the tooth-margins of the cavity, while the gold remains exempt from injury, thus performing a harmful office.

In very soft teeth, therefore, we hold that it is better to fill all unexposed cavities with amalgam, but in those of a little harder grade, medium-soft structure, which are well cared for (an important factor, to be considered in all Dental operations), cavities in positions which are kept well cleansed, or on the buccal or grinding faces, should be filled with gold. Such cavities are the first in the lowest grade of teeth, the first in the scale as we approach the better organized, which will admit of gold. All cavities possible should, of course, be filled with gold, and the possibilities begin with the class we have described; but the approximal cavities in these teeth, especially the larger ones, should yet be filled with amalgam. This is a conscientious discrimination. Or, perhaps, these approximal cavities might be filled with tin or amalgam faced with gold on the masticating margins. It is an abuse of amalgam which has brought much of the condemnation of the gold-workers upon it, that it is employed where gold should and could be used, because gold, where it can be employed, is, *per se*, a better and more elegant and durable material, *as a material*.

In the anterior teeth amalgam is inadmissible, except where they are of very dark structure and belong to very filthy persons. We have all unfortunately met with such mouths, and certainly neither the teeth nor the persons deserve gold. Sometimes, however, an unoxidizable amalgam can be used to advantage in teeth of better quality for covering a grooved cutting edge with weak walls, or in cavities beneath the gums, or on the posterior sides of the incisors. As a rule, however, it cannot be employed in visible positions. As a country-woman recently remarked, she "did not want any of that blue filling in her front teeth," and we agreed with her. In anterior teeth of medium structure, of course, gold must be

used, and in the medium-soft if well cared for,—the conical shape of the teeth facilitating cleaning and preservation. In those which are very soft or very frail, however, some other of the plastics must be used.

Amalgam is also indicated in teeth of the better qualities where the walls are thin and weak from excessive decay. The danger of breaking under the gold while filling, or the almost certainty of breaking away from the gold afterwards, points to its rejection and the substitution of amalgam as the wisest thing to do. Amalgam will support frail walls, will not spread under mastication (as gold will do, and strain the walls), and the oxidation, though unsightly, will aid in the preservation of the decaying dentos. It will also avoid the suffering and pain incident to protracted gold operations, which is a matter not to be disregarded when we think of the long trains of evils likely to follow upon a severe nervous prostration. Besides the large amalgam fillings are almost certain to endure longer than those of gold, even when performed by the very best and most artistic operators. To prove this we will only refer to the fact, noticed by all of us in practice, that very large amalgam fillings which have endured and been in active service for from ten to twenty years, are of not infrequent occurrence; but that very large gold fillings which have been so enduring and serviceable in similar positions, are conspicuous by their rarity. This is a fact which needs no comment, but is at once suggestive and decisive.

Cavities, in inaccessible and inconvenient positions, which cannot by any possible exercise of ingenuity be filled well with gold are, for many reasons, far better filled with amalgam. A good amalgam filling is better than a poor gold filling in any position. It is possible in difficult places to make a better operation, to reduce the amount of suffering required and render better service, than by attempting to use gold and make but an indifferent operation of it at best. We need but refer to those cavities high up on the necks of molars—approximal especially—or to those difficult and most unsatisfactory fillings upon the buccal faces of wisdom-teeth. Indeed, wisdom-teeth as a class, taking them as they come, are more likely to be better preserved with amalgam than with gold, because of their inherent softness, the impossibility of operating upon them satisfactorily, the pain inflicted and the endurance required.

Teeth which are so seriously affected with calculus, Rigg's disease, protracted ulceration, or any other lesion which renders them loose and insecure, should not have their usefulness, or, indeed, their very existence endangered by the force and any appliances necessary for filling with gold. Amalgam is easier and safer, and fully as serviceable. The same argu-

ment may apply to large fillings over pulps which have been previously exposed and inflamed. They must be handled with care, for a pulp once inflamed is never after in normal health, and the force of gold filling in the cavity or in the socket, may easily arouse a stubborn pulpitis or pericementitis.

Deciduous teeth are also better preserved with amalgam than with gold, on account of their usual and normal softness. It is easier of insertion and saves the little patients hours of needless suffering. The permanent teeth during childhood and adolescence are also better preserved by being filled with amalgam, on account of their softness during the growing years. Gold nearly always fails in childhood, but in adult age can be inserted with safety and assurance of success. Then the amalgam can be removed and replaced with gold, thus allowing it to perform a temporary service and a better one than gold was capable of. During the growing years the oral fluids seem to be more acid and corrosive, but on attaining maturity they seem to be more neutral or alkaline, and the enamel to acquire density and polish unknown before. Then it is safe to refill with gold.

Patients whose physical condition is such as to render them unable to safely endure protracted or painful operations, should have amalgam used as largely as possible. Very frequently the lack of health and strength, either from a chronic malady or convalescence after acute disease, or pregnancy, etc., is such as to forbid the infliction of much pain, and disregard of the indications of insufficient strength will sometimes precipitate a latent disease as a catastrophe, or even create a nervous disturbance which becomes chronic, if it does not imperil life itself. For invalids of all kinds we must, therefore, exercise the most judicious and careful discrimination to the end of not inflicting more evil than we cure. The achievement of fine operations will not always justify the risk to the patient.

We must notice lastly those occasions when to use amalgam is to abuse it. The principal one is, of course, to fill teeth with it which indicate by their texture, quality, and environment, that they deserve to be filled with gold and that they would respond favourably to its conservative powers. This is the place where the mediocre operator fails of his high calling and abuses his trust; he therein abuses amalgam. But yet again, he is justifiable on the ground that he is doing the best *he* can for his patients—he employs a material he can manipulate most successfully and with which he can save most teeth, and therein he is right.

But, again, the best of us abuse amalgam by using it in teeth worthy of gold, on the score of economy to the patient, who is unable to compensate us for gold operations. We are obliged

to employ amalgam oftentimes out of charity, for the teeth of the poor must be saved and they cannot pay for high-class fillings. The benevolent practitioners, with a flourish of large-heartedness, have frequently urged that we should fill the teeth of such patients with gold, at any rate, for charity's sake: that the gratitude of an appreciative soul and the approval of one's conscience is sufficient reward, etc. But there are few of us who could stand the rush of charitable business that such generosity would entail, much as we might admire the sentiment and desire to put it into practice. Besides, the men who are the most vociferous in advising this benevolence would be the last to practice it. The ordinary practitioner usually has as much charity practice, intentional and otherwise, as his strength and means will allow. So it is that we are forced into a position of apparent compromise by being obliged to fill teeth with amalgam, which should be filled with gold, on account of the poverty of the patient. But it is not a compromise if we advise the patient that the amalgam should be considered tentative, and that as soon as convenient he should have it removed and gold inserted instead, thus reducing it to a temporary expedient. If the time never comes when he can afford this, his teeth will still be preserved for service and benefit. In the use of amalgam, as in all things else in practice, we must exercise an intelligent, careful, and candid discrimination, praying and striving to free ourselves from prejudice and the fear of criticism, and at all times to do that which shall be for the greatest good of the patient, regardless of either "New Departure" proclamations or "Conservative" anathemas.

Although a reckless candour prevails throughout this paper, and although the writer is aware of the denunciations which have been hurled at amalgam and amalgam advocates, and which may await him, he cannot but believe that he has voiced the sentiments of almost every conscientious operator, and depicted his every-day practice, though the fear of criticism and dread of the anathema of the Inner Circle of Conservatism has deterred him from announcing his beliefs and practices.—*The Dental Cosmos*.

CASES OF DISEASE OF THE UPPER JAW.

(Under the care of Mr. BRYANT.)

CASE 1. *Periosteal (?) sarcoma of anterior surface of upper jaw; removal; recovery.* (Reported by Mr. Franklyn Brown.)—Edith C——, aged nine years, was admitted into Lydia ward on June 30th, 1881. The patient's father, aged thirty, was healthy, but her mother, aged thirty-two, had

suffered from rheumatism. Six months before admission the patient received a blow on the right cheek, and soon afterwards noticed a small swelling, which for a time remained stationary, but for the last three weeks it had increased. About two months before admission it was punctured, but with no result.

On admission, there was a slight swelling on the right cheek over the malar bone, deeply placed and movable over the bone "with an elastic feel." The superficial structures were freely movable over the tumour. The finger could be placed between the tumour and the teeth. Size about $\cdot75$ in. by $\cdot5$ in. Nostril free, lacrymal duct free. On the right side she had permanent incisors and the six-year old molar, also the temporary canine and temporary second molar. The first molar had been shed. On July 1st the tumour was removed from inside by scissors. It was easily separated from the bone. Iodine water was applied and a sponge inserted. The tumour was solid and a good deal of muscle was removed. On section it had a uniform translucent aspect and a firm close texture. It measured about $1\cdot5$ in. long by $\cdot75$ in. broad. On July 12th the patient left the hospital well.

CASE 2. Antral abscess of twenty years' standing; sinus on palate; incision and extraction of the root of the right lateral incisor; recovery. (Reported by Mr. Tresidder).—Charlotte M——, aged thirty-two, a glovemaker, was admitted on May 13th, 1881, into Lydia ward. Her parents are living. Mother, brothers, and sisters healthy. Her father suffered from some urinary trouble. Twenty years ago the patient had a blow on the upper lip; the teeth became very tender, and two or three years later she noticed a swelling on the superior maxillary bone. This swelling increased for about five years, and had since remained pretty stationary. This swelling was lanced, and she derived much relief. It was afterwards lanced from time to time, but no cure had been effected.

On admission, the patient looked a healthy young woman. Her right upper jaw was much swollen, pushing forward the skin and delating the right nostril. There had been no discharge from the nostril. The swelling hedged into the mouth, forming an enlargement about the size of a large walnut, situated in the anterior part of the roof. All the teeth had erupted. The eyeball of the affected side was not displaced. The mucous membrane of the right nostril was abundantly red, and there was a foul odour like ozæna. The nostril was quite free. Pressure on the teeth and alveolar process caused no pain, and gave no sensation to the fingers of crackling. The patient stated that when she was about fourteen or fifteen, and when her face was a little swollen owing to toothache, she

had her right upper bicuspid tooth extracted. She had also lost her left upper bicuspid tooth, and all her four second molars had decayed and broken away, the stumps only remaining. The stumps of the bicuspid teeth were also in the patient's head.

On May 24th the palate opening was enlarged, when the finger easily entered into a large cavity, evidently the antrum. The upper part was full of soft material, and some foul-smelling dark fluid escaped. On hooking the finger forwards towards the alveolus a sharp fang of a tooth was discovered projecting into the cavity. This proved to be the fang of the right second lateral incisor. This tooth was now extracted. The cavity was cleared out, and a sponge inserted. The tooth was dark above the crown, and opaque and light. The extremity of the fang was bare and discoloured. The rest of the fang was covered with a number of small, irregular, brownish excrescences resembling tartar. There was no membrane covering the tooth at all, and the fang had evidently been bathed in pus for some time.

On June 5th the patient had learned to wash out the cavity with solution of permanganate of potash. The discharge was almost nil. The naso-lateral fold reappeared. The patient being almost well was discharged.—*Lancet*.

A CASE OF LARGE SEBACEOUS OR DERMOID CYST IN THE TONGUE, REMOVED BY OPERATION, WITH CURE.

MR. BARKER read notes of this case before the Clinical Society. The patient was a woman, aged 28, who had first noticed pain and difficulty in swallowing seven years before. Soon afterwards, a swelling was noticed exactly under the tongue in the middle line, and directly behind the symphysis menti. This had been increasing ever since. On admission into University College Hospital, it pushed the mucous membrane forwards and upwards, so as to make an interval between the jaw and the root of the tongue of quite an inch broad. It also projected beneath the chin for about an inch and a quarter. The skin over it here was perfectly normal, and in no way attached to the tumour. The whole tongue was thrust much upwards, and its dorsum rested against the hard palate. The tumour was painless, and fluctuated over its whole surface; there was no trace of inflammation anywhere about it. On being punctured with a grooved needle, typical sebaceous matter was obtained. On Aug. 12th, 1882, Mr. Barker removed the tumour by a straight incision in the middle line under the chin. The tough cyst was reached

above the mylo-hyoid muscle, and lay here, partially separating the genio-hyoidei. It was easily separated from its bed, which lay almost entirely between the genio-hyo-glossi muscles, and reached quite up to the dorsum of the tongue, only covered by the tough mucous membrane of the latter. Blunt instruments and scissors were used, and hardly a trace of blood was lost, no vessels requiring to be secured, except one tiny twig, which we pinched. The wound having been well cleansed with carbolic solution, the skin was brought together with four silver sutures, and the large cavity drained with a tube. The whole thing healed in a few days without any suppuration or reaction, and the patient left the hospital on the sixth day after the operation. The cyst (shown) being removed entire, was found very tough and firm-walled. It measured three inches by one inch and a half, and was somewhat uniform. Its contents were like porridge, with a faint, sour smell, and, under the microscope, were seen to be typical sebaceous material. Its wall was fibrous, lined by a thin, glistening membrane, leaving no doubt as to its nature. Mr. Barker then alluded to the rarity of these tumours of the tongue, and, in illustrating this fact, stated that, after careful search, he had only been able to collect sixteen recorded cases, exclusive of his own two. From an examination of these, it appeared that these cysts might occupy three distinct situations in relation to the tongue: 1, between the genio-hyo-glossi muscles in the middle line; 2, they might be unilateral—that is, lie between the mylo-hyoid muscle and genio-hyo-glossus of one side; and 3, they might be bilateral, lying above the mylo-hyoid and below the genio-hyo-glossi of both sides. Their contents varied also very much, as also the age of the patients among whom they were met, although they appeared to be, in a sense, congenital. The various modes of treatment were then alluded to, but of all, Mr. Barker gave the preference to complete enucleation, without opening the sac, as the easiest and safest operation. This might either be done from the mouth, or by a median incision, as in the last of the author's two cases. The scar left by the last method was very trifling, as seen in the patient exhibited, and the ease and safety of the operation were thus greatly increased where larger cysts had to be removed.—*British Medical Journal*.

DENTAL SUPERVISION OF PAUPER SCHOOLS.

In a letter to the editor of the "Lancet," W. Soper says: "I this day introduced the above subject, in reference to our establishment at Norwood, at the board meeting of the

guardians, and should be glad to take the feeling of the profession as to the desirability of having all large pauper establishments placed under the special care of a duly qualified Dentist. I maintain that the proper care of the teeth in children ranging from six to fifteen years of age is no part of the duties of a general practitioner, and that the children would be greatly benefited if the teeth were periodically examined, more especially during the eruption of the permanent teeth. Overcrowding of the mouth is a vital point in young children, and the result is always seen in after years in the detection of dentigerous cysts, epulis, &c., and treatment in the early stages. I regret to say that my motion was not carried, and I was told that the matron always exercised a wise supervision in calling the doctor's attention to all cases requiring his aid. We are fortunate in having a doctor in attendance who gives the greatest care and attention to the health of the inmates; but with 600 children I think it is hardly fair that he should incur the trouble and responsibility of stopping and extraction. I was met with another curious objection to my motion, that we ought to pay our chaplain better for the work he did than to think of spending £30 or £40 a year for such a matter as teeth. If, in all private institutions, a Dental Surgeon is attached, how much more needful is it in a pauper establishment where children are sent into the world without friends? I should much like an expression of opinion from you as to the desirability or otherwise of the course suggested by me."

Dental News.

EDINBURGH DENTAL HOSPITAL AND SCHOOL.

ON July 24th, the Half-Yearly Meeting of the Directors of the Edinburgh Dental Hospital and School was held in No. 30, Chambers Street—Mr. W. BOWMAN MACLEOD, Dean, presiding. Letters of apology were read from the Rev. Dr. Lindsay Alexander, Mr. Joseph Bell, Bailie Clark, &c. The DEAN read his report, from which the following are extracts:—

"The past session has been one of a more than usually gratifying nature. The number of students on the roll has been in excess of any previous year, while their close attention to their general studies and their assiduity in mastering

the practical details of their profession in hospital practice has been constant, and the result progressive and satisfactory. In the medical classes (winter session) the Dental students have held their own in competition with their medical confrères."

In Systematic Anatomy, Mr. J. Nicol took the first prize, a medical student coming second, Mr. Munro third, and Mr. Cormack fourth. In Physiology, Mr. Hughes took the bronze medal, Mr. Nicol being third, while Messrs. Johnston and Kennedy took first-class certificates. In Systematic Chemistry, Mr. Kennedy took a first-class certificate, and Messrs. Nicol, Johnston and Hughes second ditto.

In the summer classes, Messrs. Nicol and J. L. Fraser took first-class certificates in Practical Anatomy, and Messrs. Kennedy, J. L. Fraser, and Wilde, first class in chemistry.

"In the special work of dental hospital practice, Mr. James Graham Munro, who last year took the prize for the best junior, has this year carried off the senior prize; the junior for the year having been secured by Mr. Nicol. In Mr. Watson's class of Dental surgery and pathology, the prize has been awarded to Mr. Nicol. At a joint meeting of the Administrative Committee and hospital staff, it was unanimously agreed to recommend the directors to extend the facilities for instruction at this school—first, by the appointment of a house Dental Surgeon; second, by an extension of the hours of practice; third, by an increase in the chair accommodation; fourth, by an increase of instruments and general appointments; and, fifth, by a re-arrangement of the hours of attendance of the Dental Surgeons and assistant Dental Surgeons. In these recommendations the directors have cordially agreed."

Mr. JAMES ROBERTSON, hon. secretary, read the report by the dental staff, stating that the attendance of patients at the hospital showed a slight improvement—there having been 2346 for the six months, of whom 1291 were males, and 1055 females. The possibility of saving the teeth was becoming more appreciated, although slowly, there having been 226 cases during the same period. The exhibition of anæsthetics also showed a decided increase.

On the motion of Mr. FINLAYSON the reports were adopted.

The CHAIRMAN stated that the prospectus for 1883-84 would be published about the beginning of October.

The Rev. Dr. MACGREGOR, in presenting the prizes to Mr. James Graham Munro and Mr. Nicol, referred to the importance of the institution, and the benefits which it conferred upon the community.

The CHAIRMAN then addressed the students, and afterwards proposed that a vote of thanks be given to Dr. MacGregor.

The motion was cordially agreed to.

A vote of thanks was then given to the chairman, and the proceedings terminated.

DEMONSTRATION ON CONTINUOUS GUM FACINGS.

Mr. A. B. Verrier purposes giving a practical demonstration of his process of manufacturing Continuous Gum Facings with his Gas Furnace, at Cotterell's Dental Depôt, Rodney Street, Liverpool, on August 9th prox.*

APPOINTMENTS.

Mr. J. McKINO ACKLAND, L.D.S. Eng., has been appointed Dental Surgeon to the Dental Hospital of Exeter, *vice* Mr. Augustus King, L.D.S., resigned.

Mr. EWEN MONTEITH TOD, L.D.S. Eng., has been appointed Dental Surgeon to the Royal Alexandra Hospital for Sick Children, Brighton, *vice* J. Dennant, L.D.S. Eng., resigned.

Mr. C. E. TRUMAN, M.R.C.S., has been appointed Assistant Dental Surgeon to the St. Thomas's Hospital, *vice* J. W. Elliott, M.R.C.S., resigned.

VACANCY.

DENTAL HOSPITAL, LEICESTER SQUARE.—Lecturer on Anatomy and Physiology to the above Institution. Applications on or before Oct. 7th, 1883, to the Dean, J. Francis Ken Underwood.

HOUSE DENTAL SURGEON for Edinburgh Hospital and School. Duties to commence Nov. 1st. Hours of Attendance, 9 to 11 a.m. daily. Salary, £30. Applications to be lodged with the Secretary, James Robertson, Solicitor, 4, Lindsay Place, Edinburgh, on or before Sept. 1st.

* A full description of Mr. Verrier's process will be found in Nos. 361, 363, and 365 of the "*British Journal of Dental Science*" of this year.

Correspondence.

[We do not hold ourselves responsible for the opinions expressed by our Correspondents.]

THE DENTAL HOSPITAL OF DUBLIN.

To the Editor of the "British Journal of Dental Science."

SIR,—It is now over six years since the Dentists of England were asked to aid in the establishment of a Dental Hospital and School of Dental Surgery in the sister kingdom.

Although with the exception of one solitary individual (Mr. O'Duffy), the Dentists of Ireland were unknown to us, yet I believe a very handsome sum was contributed in England by those interested in the elevation of the Dental profession.

Now sir, as your journal has been a medium of bringing this Dublin Dental establishment before the profession, I venture to ask, as one of its subscribers, how it is that no monthly or quarterly reports are ever published similar to those of kindred establishments in London and the Provinces?

Yours, &c.,

DENTAL REFORM.

To the Editor of the "British Journal of Dental Science."

SIR,—Perhaps some of your correspondents, through the medium of the journal, will oblige me by giving a good formula for modelling wax (pink). I find two parts paraffin wax, one part resin, is a good and very suitable wax for taking bites, but the colour is bad.

Yours, &c.

G. H. P.

To the Editor of the "British Journal of Dental Science."

SIR,—Permit me to say a few words concerning the honour recently conferred upon Sir E. Saunders. Every member of our profession rejoiced when it was announced that our talented and generous *confrère*, Mr. Saunders, had been selected by our gracious Sovereign to receive a special mark of her approbation; but not a few were disappointed when they found it was a knighthood and not a baronetcy which he was to receive. Recently a distinguished Irish physician declined a knighthood, by the advice of his friends, who did not consider the honour about to be conferred as adequate for his services. But though "we must not look a gift horse in the mouth," I cannot help thinking that Her Majesty's Government acted somewhat remissly in not advising Her Majesty to confer the hereditary honour upon Mr. Saunders, an honour he was so eminently qualified to receive and uphold.

Yours, &c.,

GRIEVED.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 82, Mortimer Street, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
3. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
4. All communications relative to subscriptions and advertisements are to be addressed to the Publisher, Mr. J. P. Segg, 82, Mortimer Street Regent Street, London, W.
5. The Journal will be supplied direct from the office on PREPAYMENT of subscriptions as under:

Twelve Months (post free) 14s. 0d.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skliros, 82, Mortimer Street, Regent Street, W. A single number sent on receipt of seven (penny) stamps.

ANSWERS TO CORRESPONDENTS.

"Y. Z."—We thank you for bringing the matter to our notice but it is not of a character for insertion.

Communications have been received from Messrs. P. J. Thompson (Brussels), G. Rutterford (London), The Manchester Dental Hospital, W. D. Miller (Berlin), T. Walker and Son (Birmingham), Percy May (London) J. R. Gray (New Zealand), "Dental Reformer," "G. H. P." J. F. Pink (London), A. A. Knight (London), T. A. S. Peall (London), J. Mc. Kino Ackland (Exeter), E. M. Tod (Brighton), J. Clegg (Rochdale), E. R. Pearce (Greenwich), T. Taylor (Newsbury).

CORRECTION.—Errata.—In list of recipients of prizes, &c., p. 678, line 20, for "Williams" read, "W. England," and for "Peel" read "F. S. Peall."

BOOKS AND PAPERS RECEIVED.

"British Medical Journal" "Lancet," "Gazette de Hopitaux," "Pharmaceutical Journal," "The Manchester Courier," "Chemist and Druggist," "New England Journal of Dentistry," "Dental Cosmos," "Southern Dental Journal," "Deutsche Monatsschrift," "Dental News," "Journal of the British Dental Association," "List of Works on Dentistry," "Transactions of the Odontological Society," "Revue Odontologique," "El Progreso Dental &c. la Haleana," "Glasgow Medical Journal," "American Journal of Dental Science," "Independent Practitioner," "Ohio State Journal," "Register of Vauderbilt University," "Dental Advertiser."

NOTICE.—We desire that it may be clearly understood that our pages are open to all for free expression of their views on matters connected with our profession. We only ask for terseness of expression and MODERATION IN TONE.

When otherwise unobjectionable, difference of political or other opinion will never be regarded by the Editor as a disqualification for the admission of any communication to the pages of the BRITISH JOURNAL OF DENTAL SCIENCE.

British Journal of Dental Science.

No. 374. LONDON, AUGUST 15, 1883. VOL. XXVI.

NOTE ON OPERATIVE MEASURES FOR EPITHELIOMA OF THE LOWER JAW.

By Professor VERNEUIL, of Paris.

THE following remarks were made on a recent occasion by Mr. Verneuil, of the Hospital de la Pitié, in Paris, before operating on a patient with a tumour of this nature:—

For many years I have always had three great objects in view in cases similar to the present one: first, to give my patients the benefit of anæsthesia by chloroform whenever I have had to perform an operation in the mouth, on the air passages, on the face or head, so as to avoid any unnecessary infliction of pain; secondly, to prevent the entrance of blood during the course of the operation, either into the air passages or the digestive organs; thirdly, to shed as little blood as possible, so as to save the patient from any cause of weakness, and to preserve all his remaining strength.

Mr. Theodore Rose, one of the professors at the University of Zurich, has proposed to operate in these cases with the head depending, so as to prevent the blood getting into the air passages; but the great drawback to this method is that it usually gives rise to free hæmorrhage. I now proceed to describe my own method of operating. All the external preliminary incisions should be made before opening the cavity of the mouth, all the blood vessels should be tied seriatim as soon as met with, so that by the time the jaw itself is reached it holds only by the mucous membrane. At this stage of the operation, a very small opening is made in the mucous membrane with a director, and a similar one in the lip; through these openings a thread is passed and then a chain saw is drawn through by its means. If the attempt to cut through the bone with the chain saw fails, it should be withdrawn and a Larrey's saw (also called Langenbeck's) used in its stead. The jaw-bone is then cut through and drawn down. The maxilla brings down with it the mucous membrane. Pieces of sponge are then placed in the sinuses, and finally the mucous membrane is divided. The operation is thus com-

pleted, scarcely a drop of blood having penetrated into the mouth; by a drop I mean of course barely a table-spoonful.

In the present case, however, I shall find some difficulty in fully carrying out this mode of procedure, on account of the secondary infiltration in the submaxillary glands. I shall circumscribe the whole mass with the thermo-cautery and after removing the affected glands I shall tie the facial artery, and if necessary, I shall prolong the incisions with a bistoury. In the case before us I believe it will be enough to remove, by two cuts with the saw, the whole of the horizontal branch of the jaw as far as the insertion of the masseter.

The tumour we have to deal with is a rather peculiar variety of epithelioma, which has been thoroughly described by Mr. Reclus under the name of terebrating epithelioma. This variety of epithelioma seems to excavate a cavity for itself in the thickness of the bone, but does not extend to any great distance; it does not often appear on the surface of the bone.

To sum up, this is how I shall proceed. The patient being chloroformed, I shall circumscribe the suprahyoid tumour with an oval incision by means of the thermo-cautery; as soon as I get to the facial artery I shall divide it between a double ligature as close to the carotid as possible. I shall then complete the oval by prolonging the incision as far as the maxillary branch of the facial artery, to which I shall also apply a double ligature. Thus, after cutting through the skin and tying two arteries, I shall dissect the maxilla both before and behind, I shall next divide the bone first in the median line, then draw it down, and finally saw it through behind. The operation will then be completed by applying a dressing.

By this method I avoid all dangers, and thanks to the double ligatures I cause no hæmorrhage, and thus save the patient's blood. My object is to perform the operation in a series of previously well determined steps, and thus, however long the operation may last, it becomes exceedingly easy.

I endeavour so to teach my pupils that they may be prepared to undertake three-fourths of all surgical operations without being obliged to have recourse to a specialist, and to do this by following the simplest and most practical methods of operating.

ABSTRACT OF PAPER ON TRIGEMINAL NEURALGIA,
TREATED BY LIGATURE OF COMMON CAROTID ARTERY.

By FERDINAND H. GROSS, M.D.

THE intention of this paper is not to treat of the general subject of trigeminal neuralgia *in extenso*, but merely to

present a single case of this dreadful disease, with condensed clinical history, extending over a period of nine years; an account of the remedies employed, and to offer a few incidental remarks.

The patient, a man aged 64, first suffered from neuralgia in August, 1873, in the right side of the lower jaw. This was the first attack of the disease. He had always good health. The pain manifested itself in paroxysms, and was confined to the region of the lower jaw. There was no fever, pulse slow and without fulness, tongue coated, and bowels constipated. Mild purgatives to correct state of bowels and tongue, were administered.

One-third of a grain of morphia, given hypodermically over the seat of pain, gave great relief. Two decayed teeth on the affected side of the lower jaw were removed. The morphia injection was repeated three times with good effect, completely relieving the recurring paroxysms. In about a fortnight the patient was enabled to return to his work, well. The disease did not recur for over three years. The patient himself describes the nature of the attack. Had shooting pains in lower jaw of great severity, radiating to corner of mouth and lips; morphia in powders, and mixtures containing this and other narcotics, were given freely. The affected side was blistered, and the result not being satisfactory, the remaining teeth, sound and unsound, were extracted, with the exception of one lateral incisor in upper jaw. They were not all removed at once, seven being the largest number at one sitting. No improvement followed. Indeed, as is asserted by writers on this subject, that true trigeminal neuralgia is aggravated by the extraction of teeth, was verified. He was then advised to have the "nerves pulled out." He applied to an hospital, and it was proposed that he should be operated on next month; meanwhile pills were prescribed. Several of these were taken and produced profound narcosis. Awakening from this condition the paroxysms returned so severely that he preferred to be operated upon at once, and applied to another surgeon, who, however, resolved to try other methods, amongst the rest electricity, and both the induced, and constant galvanic currents were tried daily, with the result that some relief was obtained in about a week or so, and he again resumed work.

The third attack did not appear for three years and a quarter, when he again applied for treatment. He then presented all the symptoms found in a typical case of trigeminal neuralgia. The three divisions of the nerve were affected. Most intense pain was always the prominent symptom—its character was that usually described by authors, viz: piercing, flashing, tingling, burning, &c. Dr. Wood says: "language has been

ransacked to find terms strong enough, and expressive enough, to represent at once the intensity and diversity of this pain." The *puncta dolorosa* of Valleix, existed in the peripheral districts, supplied by the branches of the fifth nerve. He could not brush his hair, so sensitive was the right half of the scalp. Mastication and deglutition were so painful, it was only at long intervals he would take any food. To speak at times was torture, and he would set alone in a darkened room for consecutive days and nights without going to bed.

The *point apophysaire* of Trousseau was not found to exist, nor were there the tonic or clonic spasms of the facial nerve, which are frequently found.

The vaso motor and trophic disturbances were congestion of conjunctiva, lachrymation, flushing of right cheek, with tumefaction and venous turgescence. Herpetic eruptions on lips and cheek were sometimes seen. The buccal mucous membrane was swollen, there was salivation, and a thick, yellowish coating of fur, covered the affected side of tongue.

The patient had never had rheumatism, gout or syphilis. He was not of a neurotic family.

One third grain morphia was tried hypodermically with partial relief. Hypodermic injections of atropia were next tried, also quinine, but all merely gave temporary relief. Iron was tried and abandoned. Arsenic and iodide of potash, internally, and veratria ointment, with no avail.

Therapeutic measures having failed, it was resolved to see what surgery could do, and neurectomy was suggested. It was found that pressure on the right common carotid relieved the pain in half a minute. Ligature of the common carotid for proso-palgia was first proposed by Nussbaum, and has been practised with varying success. In all cases of ligature of common carotid brain symptoms appear, according to Fischer, and 16 per cent. are fatal, so that the operation is very grave; but the case was severe and pressing.

The patient giving his consent, the right common carotid was tied, under the influence of ether. After a deep dissection the vessel was tied at the point of election, just above the omo-hyoid muscle, with carbolized silk, the ends being allowed to hang outside the wound, which was closed by silver sutures and dressed antiseptically. After the operation, with the exception of one spot on lower jaw, the patient expressed himself relieved. The surface temperature had been taken on the sound and affected cheek the day before the operation, and was as follows: sound, $95^{\circ}2$; unsound, $95^{\circ}1$. The surface temperature continued to be taken for 14 days after the operation, and averaged, sound side, $97^{\circ}5$; affected, $55^{\circ}3$. The antiseptic dressings were changed every two

days, and the wound went on well and healed by the first intention, except at the spot where the ligature protuded. This came away on the sixteenth day. The patient remained in the hospital for nineteen days, and the immediate effect of the operation was complete relief in the districts supplied by the first and second divisions of the trigeminus, and such a modification of the third division that pain was only felt in one spot on the lower jaw. After the patient left the hospital he got pneumonia.

The neuralgic pains begin to reappear from time to time, and to increase in severity, until at last, after eight months, he was re-admitted to hospital, and neurectomy of the inferior Dental nerve was performed; a curved incision was made, with its convexity presenting downwards and forwards, including the anterior lower edge of the masseter muscle, the bone was trephined at the junction of the body and ramus—the nerve was put upon the stretch in both directions and a portion excised. The patient left the hospital quite well, and continued so for over twelve months. At the expiration of that time the patient returned to the hospital, complaining of great pain in the infra-orbital region and the ala of the nose. It was resolved that neurectomy of the superior maxillary nerve should be performed after the manner of Wagner. A curvilinear incision was made along the lower border of the orbicularis palpebrarum muscle, and the tissues dissected off so as to expose the upper portion of the levator labii superioris, which was drawn to the inner side by an aneurism needle. A silk ligature was passed under the nerve as it emerges from the infra-orbital foramen, and tightly drawn. The flap was then turned up, and just within and along the orbital margin of the periosteum was divided, and raised from the entire floor of the orbit by an elevator—the structures of the orbit lifted up and drawn forward out of the way. The course of the nerve was apparent underneath the thin roof of the infra-orbital canal, which was laid open. The nerve was lifted out of its bony canal and divided; there was but little hæmorrhage, as the carotid had been tied. The wound healed in a week, and the patient went out well and happy. After about four weeks, the inferior dental began again to trouble him. He was again operated upon, and it was found the nerve had united. The jaw on this occasion was trephined in two places. The nerve was drawn out its full length, the wound healed, and no bad symptom occurred, and the patient returned home completely relieved.

Upon the question of the etiology or pathology, we find ourselves on difficult and uncertain ground.

Nerve pathologists are not agreed whether the lesion is

central, peripheral, or intermediate in the nerve trunk, or in the bony structure of the canals through which the branches of the trigeminus pass.

Cases have occurred due to irritation, or compression of the nerve in its inter-cranial course, from exostosis, caries, tumours, or aneurism. Foreign bodies have also acted as peripheral irritants. In the present case it is impossible to say how far local mal-nutrition may have influenced it. In some cases inflammatory changes have been found in the neurilemma, or in the nerve itself, whilst in others there has been no apparent structural change.

STRETCHING THE INFERIOR DENTAL NERVE.

By Professor MARC SEÉ, of Paris.

AT one of the meetings of the "Société de Chèreergie," Mr. Marc Seé related the case of a woman, aged 47, for whom he had stretched the inferior Dental nerve. She had been suffering for over six years from excruciating neuralgic pains in the left half of the lower jaw. Every internal remedy had been tried but without any result, and the patient was getting into such a weak state that he determined to try the effect of elongation of the nerve. The operation was carried out in the following way: an incision was made along the inferior border of the horizontal branch of the jaw; and the internal pterygoid muscle cut through at its insertion into the bone. The finger was next carried along the internal surface of the jaw up to the spine of Spix, and the nerve hooked and elongated. The wound healed very slowly. The operation was most successful, and the patient was entirely relieved of the pain. A partial loss of sensation on the same side of the tongue makes it probable that the lingual nerve was stretched at the same time.

Mr. Polaillon mentioned two cases of the same nature in which he had first trephined the ræmus of the jaw, and thus reached the nerve. In his first case the pains disappeared entirely for several months, but then returned at intervals. In the second, he first stretched the nerve, and then divided as high as possible, and tore out the lower end. The neuralgic pains lasted some time after the operation, but then disappeared altogether and had not returned. The operation he considered more easy of performance than the one described by Mr. Marc Seé, and void of danger.

SALIVA.

BY HARRY BALDWIN.

(Concluded from p. 710.)

7. AN ACID REACTION OF SALIVA IN HEALTH.

The mucus of normal saliva is probably when first secreted always alkaline, but when remaining long in the gland-ducts, or in the mouth, it undergoes acid fermentation. In the mouth all the conditions necessary for fermentation exist in a high degree—viz., presence of a ferment, fermentable substance, water, and a temperature of from 77 to 104° F. There is no lack of ferments in the mouth for, besides the ptyalin, which is one of its natural constituents, decomposing nitrogenous substances are generally present which act as ferments; the decomposition of these substances being brought about by bacteria. Particles of food retained in the mouth as well as the mucus undergo acid fermentation, thereby tending to give the saliva an acid reaction. The acid which chiefly arises from fermentation in the mouth is supposed to be lactic. Cane-sugar retained in the mouth very readily undergoes fermentation, resulting in the formation of lactic, butyric, and acetic acids. Both lactic and butyric acids are declared by M. Pasteur to arise invariably from the activity of micro-organisms (just as yeast fermentation arises from the activity of a minute vegetable cell, *torula cerevisiæ*), which he calls *fermentum lacticum* and *fermentum butyricum* respectively.

Magitot maintains that parotid saliva is almost always acid when first secreted; the acidity being due to carbonic acid gas, which keeps phosphates and carbonates of lime in solution, but that the acidity soon passes off, owing to the escape of the gas, and then the salts are precipitated as tartar.

When fasting the mouth gives the strongest acid reaction—i.e., when the secretion of saliva is in least amount.

8. EFFECTS OF DISORDERED STATES OF BODY UPON IT.

Certain acute diseases, as fevers, inflammations, &c., act reflexly on the salivary glands and mucous membrane of the mouth more or less completely arresting the flow of saliva. Moreover, the mucus of the mouth is, during these maladies, of abnormal character, and is capable of passing into the concrete state like the mucus of the nasal passages. Thus it forms *sordes*, or flakes upon the teeth, gums, and tongue. Magitot says these flakes always give, when tested with litmus paper, a distinctly acid reaction.

In small-pox, salivation is often met with. Donné wrote a book to show how the chemical characters of saliva could be made a means of diagnosing affections of the stomach.

He says he found that in gastritis, enteritis, and typhoid fever the saliva, which was alkaline at the commencement of the affection, became first neutral, then acid as the disease advanced, again becoming alkaline on the recovery of health. He also found that in lung affections, such as pneumonia, bronchitis, and pleurisy, the acid reaction was more or less marked.

Chronic diseases, as dysentery, gastralgia, dyspepsia, &c., are accompanied by a thickened condition of the oral mucus, and a clammy state of the mouth. The mouths of patients suffering from these complaints give a marked acid reaction. The acid reaction is easily accounted for when it is remembered that the thickened mucus harbours fermenting alimentary débris, and the mucus itself ferments.

In diabetes M. Œhl states the saliva, as well as the urine, contains sugar, and this fermenting gives the saliva a strongly acid reaction.

A remarkable case of complete absence of saliva in a young man was published in vol. xxi. of the "Cosmos." The man was 24 years of age, and had never had any secretion of saliva from birth. In the account he gave of himself he stated that he had never erupted any temporary or permanent teeth. On examination, however, there were found what appeared to be the remains of the lower six-year molars, but no other indications of teeth. The tongue was deeply serrated transversely, and the soft parts were dry and leathery. His speech was thick and apparently laboured. He had never, throughout his life, been able to take any kind of solid food. His health was nevertheless good, and his food was apparently as well digested as though it had been mixed with saliva as usual.

9. SALIVATION.

Salivation or ptyalism is a greatly increased flow of saliva, and is caused—1st, by local irritation acting reflexly. 2nd, by reflex irritation from distant parts. 3rd, by nervous diseases; and 4thly, by certain drugs.

Under the heading of (1) salivation from local irritation comes the salivation which affects infants during the first dentition. Before teething an infant's mouth is drier than an adult's; but as the time draws near for teeth to be erupted, saliva is secreted in very large quantities. The profuse secretion is supposed to reduce the tendency to inflammation by draining the blood, in the region of the irritation, of some of its constituents, and as Mr. Coleman remarks, it is "a view supported by the fact that in certain inflammatory conditions of the gums relief is often secured by producing

this condition artificially by the agency of what are termed *sialogogues*."

Other sources of local irritation producing salivation are stomatitis, ulcers of the mouth, ranula, and one case is recorded of an excessive deposit of tartar on the lower teeth, causing profuse salivation, and also obstinate vomiting.

Local irritations like the preceding act on the salivary glands by reflex excitation, but salivation is sometimes produced (1) by reflex irritation from distant parts. Examples of this is that produced by diseases of the stomach, worms in the intestines and pregnancy. (2.) Nervous diseases sometimes producing salivation are various forms of insanity, hydrophobia, hysteria, paralysis and neuralgia of the face. (3.) Of drugs which cause salivation mercurial preparations are the most powerful; but iodine and some others have a similar effect. An overdose, or the too great action of mercury, may produce very profuse salivation with swelling of the salivary glands, tongue, and whole of face, also of the gums, with great tenderness, ulceration of the mucous membrane of the mouth, loosening and perhaps loss of the teeth and even necrosis of the jaw. When iodine is given in large doses it may produce salivation as well as irritation of the mucous membrane of the nose, frontal sinus, eyes and pharynx, like that experienced in an ordinary cold in the head. In the treatment of salivation it is first necessary to remove the cause if possible. Astringent mouth-washes of alum, tannic acid, oak-bark, or weak mineral acid, are recommended. Opium is said to be of great value as an internal remedy in salivation.

10. EFFECTS OF SALIVA ON THE TEETH.

Normal healthy saliva has a beneficial action on the teeth, because, being alkaline, it neutralizes any acid which might remain in the mouth; acids being recognized to act prejudicially on the teeth.

In the diseases given above, where the saliva is abnormally thick and tenaceous, due to its containing an increased amount of mucus, the mucus, which tends to collect together, becomes the seat of acid fermentations, adheres to the teeth, especially at their necks, and holds caries-producing-agents in contact with them, itself enjoying comparative immunity from disturbance or solution.

The flakes of mucus which have been stated above to attach themselves to the teeth during certain illnesses are fertile sources of Dental decay, from the facility with which they harbour caries-producing agents in contact with the teeth.

Thus it is seen that normal saliva is favourable to the preservation of the teeth, while the abnormal saliva, resulting from diseased states of body, has a noxious influence over them.

I will conclude by saying that it is unfair to attribute, with Magitot, dental decay to saliva. The decay is caused by the activity of certain caries-producing agents contained in the saliva, but which it would be out of place to enter into in this paper, and not by the saliva itself.

Thank you for your attention, gentlemen.

UNILATERAL PROGRESSIVE ATROPHY OF THE FACE.*

THE first case of this sort has been described by Parry in 1825. Bergson, in 1837, described a case taken from Romberg's "Polyclinic," and pointed out the possibility of implication of the nerves of the vessels.

Stilling, in his work on "Spinal Irritation," mentions a case observed by Schuchardt, and explained that the atrophy is due to a functional disturbance of the vascular nerves, especially those which run in the trigeminus to the vessels of the head. His hypothesis that this was a case of "diminished reflexion of the sensitive vascular nerves upon the corresponding vaso-motor nerves" is certainly somewhat forced. Many other theories have been put forward by Moore, Axmann, Hueter, Guttman, M. Meyer, Hitzig, Bitot, Lande, Brünner, and Tanturri.

Moore considered it a distinct form of progressive muscular atrophy in the region of the seventh pair of nerves, while Beerwinkel referred it to a disease of the gasserian, or the sphenopalatine ganglion, Brünner to a permanent state of irritation in the cervical sympathetic, and Lande quite denied its neurotic character, and preferred to assume a genuine primary atrophy of the adipose tissues. The discussion on these points is still open.

As regards predisposing influences, no hereditary transmission of the disease has as yet been observed. But it is certain that youth and the female sex are predisposing circumstances. Out of 16 reported cases which may with certainty be classed under this disease, 5 were observed in men, 11 in women. In all the cases the disease commenced before the 25th year of life, namely, at the ages of 2, 3, 6, 7, 10,

* Hemiatrophia facialis progressiva, from Ziemssen's "Cyclopædia of Medicine."

one each; at 11, three times; at 12, once; 13, once; 15, twice; at 18, 22, 23, 24 one each.

It is noteworthy that the disease has a predilection for the left side of the face; among 16 cases 13 were upon the left and only 3 on the right side.

In a few cases the outbreak was preceded by scarlatina (Bergson), measles (Hueter), whooping-cough and a local peripetic eruption (Schuchardt). As occasional cases, a severe cold taken by exposure to draught and the like are sometimes mentioned; sometimes a traumatic lesion. Schuchardt, for example, speaks of a fall on the head, which left a cicatrix on the right parietal bone, below the coronary suture. In several cases the commencement of the atrophy has been preceded for a longer or shorter time by notable disturbances of innervation, especially symptoms of sensory or motor-irritation. Tearing pains in the head, pains in the corresponding side of the forehead, or superior maxillary region, are frequently mentioned; also toothache (Beerwinkel).

In one case (M. Meyer) the patient had suffered from epileptic fits for several years previously; of these fits there were two sorts, one severe, lasting several hours and separated by long intervals; the other slight and more frequent, in which the side of the face, which afterwards atrophied, was the only part much affected.

In Brünner's case also, epileptic attacks occurring for the first time during pregnancy, continued for a year before the outbreak of the disease. In Barry's case a (hysterical?) left hemiplegia preceded the disease, with transitory disturbance of intelligence, but these had passed away two years before the beginning of the disease. In a case observed by Axmann and Hueter, the patient had irregular spastic contractions of the masticator muscles, which commenced in the 7th year of his age, grew less frequent at his 14th, but never quite left him. There was increased delicacy of sensation of the left trigeminus, especially one and two branches, and difference of temperature being noted with greater clearness than on the right. The atrophy developed itself not long after the appearance of these phenomena. It was chiefly confined to the region supplied by the third branch, viz., the temporal inferior maxillary region.

DISCUSSION ON THE THEORY OF CARIES.

(Continued from p. 702.)

Mr. W. J. MILLES: As Mr. Arthur Underwood is unable to be present to-night, he has asked me to make any remarks I

choose in his place. I shall confine my observations more particularly to the subject which we have been studying together, viz., the action of micro-organisms in the production of Dental caries. We have found that micro-organisms are always present in all cases of caries in certain definite lines—the lines they take up are along the course of the dentinal tubes. In the most superficial part of caries the tubes are broken up and crammed with organisms—micrococci, bacteria, both oval and rod-shaped, and some fungi, such as the leptothrix—the leptothrix being more in the superficial part, and never penetrating deeply into the tissues. In the deeper parts the organisms become less numerous; they follow distinctly the line of the tubes, branching out here and there, and in the most internal parts they are frequently diminished down to single file. These observations have been corroborated in various ways. I may mention that Dr. Miller, of Berlin, has substantiated them in nearly every point, though he makes some slight differences. He considers that the leptothrix which is found in the more superficial parts becomes in the deeper parts converted by gradations into long bacteria, then into small rods, then into the oval bacteria, and lastly into the micrococci. Our observations are distinctly opposed to this view, for we have invariably found that along any isolated tubule you may take, the same kind of organism is always present. If at the superficial part it is a rod-shaped bacterium, then up to the very terminal part of the tubule it is still a rod-shaped bacterium. So an adjoining tubule may contain micrococci, but the micrococci pass along the whole of the tubule, and we find no other kind of organism in the single tubule. This shows very nicely a natural experiment which can be produced artificially. You probably all know that the flask experiments, made in the first instance by Pasteur, and improved by Koch, act in a somewhat similar manner. If you take a long tube and fill it with some purified materials, such as gelatinous meat infusion, absolutely pure, heat it up to a certain temperature, so that no organisms can be present, and then inoculate the surface of it with a special organism, that will grow from the surface of the tube down to the bottom, and you will find nothing else present but the special organism. So in the mouth it seems that each tubule is apparently naturally inoculated by a special organism, and this leads to the presence of others, and thus you have these special organisms in the isolated tubules. The view that Dr. Miller takes as to the change from leptothrix into bacteria, and finally into micrococci, is certainly opposed to all modern ideas of the life-history of micro-organisms, for

it is known that each kind always produces its like. Dr. Miller, though he agrees with us in the main facts of the microscopical appearances, yet draws some rather different conclusions. He considers that the micrococci and bacteria have no great effect in the active production of caries in the earlier stages—in the stage of decalcification—he considers rather that caries is produced by fermentative processes going on in the mouth. But after all that comes to the same view as we hold. Fermentation, as every one knows, is really produced by the presence of micro-organisms and fungi; fermentation in the mouth is produced by the same causes which produce it elsewhere, and therefore it comes to the same thing, that these micro-organisms are really, as in our view, the chief factors in the production of caries. They produce fermentation and putrefaction, an acid is formed, and so you get decalcification and breaking down of the dentinal structures.

This view of the active participation of the micro-organisms in the production of caries is strengthened by a consideration of the opinions now held in reference to them in general medical literature. Every year observations are being made showing that different forms of micro-organisms are really active factors in the production of disease. I need scarcely mention the bacillus of tubercle, which everybody knows now-a-days is really considered by most scientific men to be the active cause of acute tubercolosis and tubercular phthisis. So, again, with regard to infective diseases, we are gradually coming to the view that their active cause is some organism. Lupus, leprosy, septicæmia, erysipelas, gonorrhœa, and syphilis may be placed in this class. Again, certain diseases in the lower animals, such as anthrax, cholera of chicken, &c., have been demonstrated by exact experimental observations to be caused by a special micro-organism. This may afford some little additional proof in favour of the fact that micro-organisms are really the active producers of caries.

One of the most important points, I think, in considering the pathology of caries, is the production of artificial caries. I am not quite certain of the point, but I believe at present it is rather a moot point as to whether artificial caries really can be produced—that is, whether identically the same pathological changes are found in a tooth in which artificial caries is produced out of the mouth as are found in the mouth itself. Mr. Underwood's observations and my own, as far as they have gone at present, tend to show that one cannot produce artificial caries exactly similar in every respect to that in the mouth. We have made a number of experiments, under conditions as similar as possible to those in the mouth—conditions of

equable temperature, a certain pabulum to the tooth, alterations of the fluid, changing it several times a day, &c.,—but we have been unable to produce exactly the same microscopical appearances as one finds in caries in the mouth. There is, undoubtedly, softening of the tooth; but one has to distinguish decalcification from caries. You get decalcification from the fact that fermentation, it may be of a different kind, produces an acid which decalcifies the teeth; but you do not find the same arrangement of the micro-organisms in the tooth thus artificially treated as you do in the natural disease. I have limited my observations more to the pathology of caries, and not to the conditions which the President mentioned just now as to its primary causes with regard to the deficiency of lime-salts, weakness of the enamel, &c. I have preferred to speak of the conditions which we have observed ourselves. I may mention that in speaking of changes which occur in teeth in the mouth, I include those which occur in the ivory dentures that are used I believe in Dentistry, or that have been used; the change in the ivory is the same as in caries of natural teeth, and the explanation of this seems to be that the denture is subjected to exactly similar conditions in the mouth as the natural tooth is. In the attempts at artificial production of caries it is impossible to produce conditions exactly similar to those which occur in the mouth. You cannot get the fluids secreted at the moment, and covering the whole tooth. It may be that these organisms require certain special conditions to produce their changes. We all know that special organisms have special attributes. It is with the greatest difficulty that the bacillus of tubercle has been made to grow externally to the body. It has to have a certain equable temperature, and will only grow on a certain soil, the soil being solidified blood serum. It will not grow under other conditions external to the body. So it seems to us with regard to artificial caries. It is not the same as the caries which occurs in the mouth, because it is impossible to produce exactly the same conditions as go on in the mouth. And, therefore, the fact that caries cannot be made to go on in teeth which have been removed from the mouth, is not opposed to the view that the micrococci and bacteria are really the active causes in the production of caries.

Mr. C. TOMES: There are very few things that I should like to say in taking part in this discussion on dental caries, because I have, unfortunately, not had the time to make any observations upon the subject recently, and because this discussion arose, I think indirectly, as a kind of protest against the subject being befogged by a great number of generalisations based, not upon scientific facts capable of being

recorded, and capable of being accurately described, but based upon general impressions. It seems to me that any person who contributes to the literature of any subject his general impressions, and does not put down any recorded facts from which other persons can form their own impressions, has not only contributed nothing of value to the subject, but he has committed a species of literary or scientific crime, because he has given other people the trouble of wading through a quantity of material, and when they have done that they will find that they will be not only none the wiser, but will probably be somewhat befogged. As I have not, therefore, any observations of my own to bring before you—at all events, no recent observations—no observations that are not recorded elsewhere—I have very few words to say. The prominent aspect of the question which is before us is the one that is before the whole medical profession, of which Mr. Milles has just been giving us an account, namely, what is known as to the influence of micro-organisms on the production of Dental caries. So far as my own slight investigation into the subject has gone I am inclined to go fully with Mr. Underwood and Mr. Milles in what they have described, and in what they believe, only I think there is always this danger. We know certainly, quite clearly, that micro-organisms do accompany caries; we know certain things about the way they accompany it; we know how they run down the tubes; and we know pretty clearly and distinctly, as Mr. Milles has mentioned to-night, that there are certain definite micro-organisms which are capable of cultivation, and which are capable of breeding true, and that they do not run into one another as Dr. Miller has implied or asserted in his paper. But I think, while we recognise that fully, we must not forget that there are a number of other influences which must come together. We must have a coincidence of a number of conditions before caries is produced, whether it is produced by the agency of the micro-organisms or not. There is an instructive comment on that in some of Dr. Miller's experiments, in which he attempted to inoculate portions of sound dentine with micro-organisms from portions of unsound dentine. His experiments failed, as one would have expected it to fail, because all the conditions which one would expect to be requisite for success were not there. The experiments are, notwithstanding, very valuable, because they do show that the micro-organism is capable of growing under certain circumstances which do not enable it to attack dentine—that is to say, he found a certain multiplication of his micro-organisms upon dentine, and he did not find any softening of that dentine which could be detected. Therefore he seems to me to have contributed one valuable fact to our knowledge of

the subject, namely, that it is impossible for the micro-organisms to be growing, and yet for the whole set of conditions necessary to produce caries not to be there. I think we may get some clue possibly to the reason of this if we look into the experiment that is sometimes performed for us by acute disease. I have within my own knowledge seen several cases in which patients, having rather exceptionally sound teeth up to the age of full adult life, twenty-five or thirty, have suffered from a severe attack of typhoid fever, and then their teeth have gone with the most extraordinary rapidity all round the necks, and all in between—everywhere that they could. Now it seems to me that it is not particularly likely that those mouths had escaped infection with micro-organisms up to that date, but simply that the disordered oral secretions that were left behind by the typhoid fever—the condition of the gums and so forth, as visible to the naked eye—had afforded to the micro-organisms the pabulum needed not only for their own growth, but for the development of those acids which decalcify dentine and which go so far towards producing caries. It seems to me that the only reason why all teeth are not always destroyed—because all teeth must be continually exposed to micro-organisms, and a single carious tooth in your head must supply spores enough to destroy every tooth in your head and in those of all your friends—but that does not happen; and it seems to me that the only reason why it does not happen is that there is needed the coincidence of other conditions, and that those conditions are most often to be found in the oral secretions of the individual. I could say a great deal more about my own belief and my own impressions upon the subject, but that is exactly what I do not wish to do, and what I do not wish anybody else to do. I have seen these few cases of typhoid fever producing an abrupt and most marked change in a mouth. Those are the only experiences which I have to bring before you. About those I have considered myself justified in saying a few words, and I hope I have not stultified myself after what I originally said in deprecation of mere generalisations, based upon no observations, and from which anybody can argue anything.

Dr. ST. GEORGE ELLIOTT: I agree with Mr. C. Tomes most fully that it is useless to speak on a subject unless we have something of value to advance; and let me say to the young men of this Society, that if they would work at home and do something for the advancement of our great science, at the end of the year we should have some materials to base a positive theory upon. For instance, with regard to the condition of acidity in the mouth, or the opposite, if only one in ten would test one in twenty patients with litmus paper, he

would be able to form some general ideas as to whether acidity is really common or not, in connection with caries. And if every one of us—and I believe there are a large number of members of the Society—would take every case that comes to him for one year, and would test the condition of acidity of the mouth, even if he only uses litmus paper—it is not at all a difficult operation—and tests every cavity to find if they are uniformly acid, we might suddenly discover that a large proportion of these cavities are alkaline. Of course we do not expect any such thing, but sometimes we meet with just the things we do not expect.

The theory that micro-organisms are the cause of decay is a very old one. From the dawn of the human family to the present time the common people looked to “worms” as the cause of toothache, probably because toothache, as a rule, is of an intermittent character, generally more or less violent, giving the impression that some animal is biting. So common is this at the present day in partially civilized countries that Dentists recognise it as a fact that not only micro-organisms exist, but something very much larger, which is very easily defined—something that they can pick out of the cavity of the tooth, and show it to the patient. The Chinese Dentists are exceedingly expert in this kind of thing. When you visit a Chinese Dentist (he has no office or surgery, but you generally find him in the street under an umbrella, or by the side of a fruit stall in the market-place), and you present yourself with your aching tooth, he will tell you at once that the cause is a little “wiggler”—a little animal biting the nerve in the interior of the tooth. You doubt it naturally, supposing you are a foreigner, because you have been better educated. He immediately takes his instrument, his spatula, puts it in your mouth, and with his pair of tweezers pulls out a little animal, a worm, and shows it to you in order that you may examine it yourself; if you like he will take out two or three more. When you are satisfied as to the cause of the toothache he will, with the help of a hammer and a piece of wood, soon extract the tooth, and relieve you from further trouble. It is done in this way. On the side of the spatula there is a shallow hole, the spatula being a narrow piece of wood; the hole is covered with a thin piece of paper, and in the hole there are a number of these little artificial worms. On introducing the spatula into the mouth, the paper becomes moistened and is readily torn with the finger, and these little creatures are picked out and shown. Now it is a strange fact that this explanation is recognised throughout the whole of the Eastern world, not only in China, but you find the same thing in Thibet, Northern Siam, North Western India, and

even in South America, where an entirely different condition of affairs has existed for centuries.

I should like to say, with regard to Dr. Miller, that I saw a very large number of his specimens, probably over a thousand, and they certainly appeared to bear out all that he had stated with regard to them; that is to say, as a rule his specimens first commence with leptothrix: this breaks up into bacilli, which are a little shorter, and then into the micrococci. These are the three forms which he invariably finds. Now you must do him the justice to think that he is honest. He had no hobby to bring forward; he simply wanted to demonstrate the truth. Now, if in over a thousand experiments that was the result, you certainly ought to give him credit for it. I would like to say that, upon a survey of the different theories of caries, it occurs to me that it is utterly impossible for us to accept any one. We have had professors, and lecturers, and speakers upon this subject throughout the world: all have adopted different theories; all have brought forward particular hobbies of their own, and it is only by a certain amount of coalescing of theories, and combining of two or more together, that we can meet the case. For example, the chemical theory is the most popular one at the present day, and it certainly accounts for a great deal. But if chemical action is invariably the cause of decay, why does it not exist always in those places where you have the greatest amount of acid—between the teeth? Why does decay occur at any point in the mouth or any part of the teeth? Of course it is readily answered: there must co-exist with this chemical condition a condition of formation of the teeth originally. There must be a defect in the structure of the tooth at the point which is acted upon by the acid, and I think this is now generally recognised by certainly all prominent dentists.

Mr. HENRY MOON: I am afraid I have only general impressions to speak to, but those general impressions would lead me to imagine that perhaps one active agent in starting decay had been omitted from our discussion, and that is the mutual pressure of the teeth. Where teeth are closely packed together, the attrition which they exercise upon each other may possibly disarrange the enamel sufficiently to let in the other factors of decay. I say this because if you examine old skulls and old teeth, you will find the sides of teeth which have been closely in contact very often present polished facets; and if in those strong teeth we get polished facets, I think in the weak modern teeth we are likely to get sufficient disarrangement of the enamel to let in the factors of decay. It is generally admitted, I believe, that modern teeth are exceed-

ingly weak as compared with the teeth of more primitive times. In fact, it seems to me that it would be as unreasonable to expect the modern fragile tooth to resist the same destructive agencies as the strong tooth of old did, as it would be to expect the houses of the jerry builder of the day to stand wind and weather in the same way as old masonry does. I may mention one case which I remember, in which acid, as I imagine, was the prime factor; and I think we shall find in our practice, and in our observations, that particular cases will crop up which have to be investigated separately—they will have different surroundings from the generality of our cases. In that particular case a patient came to me whose diet for years had consisted almost entirely, as he told me (and he was a clergyman), of cheese and bitter ale. I had to put in lower teeth for him, and I simply cut his teeth off with a knife, instead of having to use a saw, or to nip the teeth off. That was a case of decalcification; but whether this was due to an excessive degree of acidity in the mouth, which I think most probable, I cannot be sure, as I unfortunately did not test. Another point that I think presents a good field for observation to any man who has the requisite knowledge, and the time, is that of the saliva derived from the different glands. I think that we must all have observed the extreme amount of decay which one sometimes sees in the case of patients who have an immense flow of watery saliva. Then in other cases we all have seen how *viscid* saliva is accompanied by a very exceptional amount of decay. It appears also to me that our predecessors in Dental surgery had only to deal with reasonable decay, decay that occurred in the natural fissures of the teeth; but we in the present day have to contend with interstitial decay. It is a constant experience that young people come to you who, with the exception of the lower incisors, have nearly every tooth in their heads decayed wherever they touch their neighbours. This will bear out the theory, or rather the fact, of the greater weakness of modern teeth, and also, probably, of some unhealthy condition of the oral fluids, which perhaps before were not present. I think the question of the really great comparative immunity of the front lower teeth is well worthy of consideration. My own experience is that the lower front incisors and canines escape decay remarkably as compared with other teeth, until we put in a lower artificial denture, and the theory—it is simply a theory—is that possibly those teeth have escaped because they have received a constant alkaline wash from the saliva poured out from the sub-lingual glands. It may be that artificial denture acts injuriously by preventing this, or it may cause that amount of attrition which will so far

injure the enamel as to let in the factors of decay. I fully concur in the remarks reported in the last number of the "Transactions" as to the desirability of great attention being paid to the diet of children in infancy, and in their earlier years, and also to the diet of the pregnant mother. I would go a step further back even, and look to the breed of the race. I do not see that it is altogether the duty of medical men to leave this great question of national importance to be impressed upon the public through the columns of a comic paper. I daresay you all remember the picture of Du Maurier's, in "Punch," in which a young lord, of rather bad physique, addresses a bull in his father's field and says, "What a fine fellow you are!" and the bull replies, "Ah, my lord, if your ancestors had taken as much trouble with your breeding as they did with mine, we should have a very different result."

Mr. S. J. HUTCHINSON: It is difficult for those speakers who follow Mr. C. Tomes and Dr. St. George Elliott to venture upon their feet at all, but I have been bold enough to do so because my name appeared on the back of the last number of the "Transactions." If it had not been there I do not think I should have mustered up courage to come forward. I think even Mr. Tomes, with his critical manner, has made a little mistake in departing from the question which is before us. We are not asked to theorise ourselves at all on this question, but we are simply asked, "Do the incontrovertible facts which we now possess, as to its etiology and pathology, fully account for the phenomena of Dental caries?" We are called upon to look to what has been already written and done, in the way of investigating the cause of Dental caries, to see whether those facts do sufficiently account for Dental caries. Now I venture to take my stand here, and I hope I shall be supported by the majority of the members present, although I do not suppose it will be put to the vote, and this I say most distinctly that the "incontrovertible facts" which we have are not all of them incontrovertible; and in the next place, I say that the view taken by Mr. Coleman at the end of the discussion at the February meeting, is one, I think, which will be more universally received than that put forward by Mr. Sewill. I would only call attention to his own address to show you how strong the doubt is in his own mind—I do not mean in his literary mind, but in his mental mind—as to what Dental caries really is. He says, "Though the treatment of Dental caries which has been empirically followed has certainly been fairly successful, still there is no knowing but that it might be modified with advantage *could we be certain of the true nature of the disease.*" Mr. Sewill him-

self is, therefore, not certain of the true nature of the disease, and, therefore, the incontrovertible facts that we know so far are not incontrovertible, neither do they fully explain Dental caries, even to the critical mind of our friend Mr. Sewill.

Mr. SEWILL: I did not say that.

(To be continued.)

THE FORMATION OF THE MATRIX OF DENTINE:
OF THE SHEATHES OF NEWMAN, AND THE FIBRIL OF
TOMES.*

By R. R. ANDREWS, D.D.S., Cambridge, Mass.

GENTLEMEN: At the request of the Chairman of the Section on Histology, I have devoted the little time that could be spared from a very busy professional season to the reproduction of a paper which I supposed I had, but which I find has been destroyed. I shall not attempt any elaborate treatise, but will give you a few histological points as I see them under the microscope. Six years ago I had the honour to read a paper on this subject before the Boston Microscopical Society (since merged into the Society of Natural History). The conclusions reached at that time, although differing from the theories of the accepted authorities, have to my mind been repeatedly verified by my more recent investigations. A subject of this kind requires the most careful observation, and before presenting that article I devoted a large portion of my leisure moments for a period of two years and over to actual research—making large numbers of specimens fresh from embryos, at about the time of birth, from which I obtained my facts.

Let us consider the form of the dentine germ. At first it is nothing more than a part of the sub-mucous tissue of the jaw, which becomes more rich in vessels and cells than the neighbouring parts. It does not present any structure essentially different from that found around it. It speedily assumes the form of the apex of the crown of the future tooth; if a canine, simply conical; if a bicuspid, two cusps, etc. The cells forming its surface become differentiated from the parts beneath it, becoming much larger than the embryonic cells of the germ itself; they are longer than they are broad, and are called odontoblasts or dentine forming cells. They are now ready for the process of calcification. By this description I

* Read before the Massachusetts and Connecticut Valley Dental Societies, at Springfield, Mass., June 6th, 1883.

shall more clearly present to you the views of the generally acknowledged authorities of the present day.

I take it for granted that we are all acquainted with the appearance of formed dentine, with its matrix or basis substance, tubes, sheathes and fibrils. Kölliker, in an article on the development of teeth, in 1868, speaking of these odontoblasts, believes that while the canals and their contents are continuations of them, the matrix is a secretion from the cells, or from the rest of the pulp, and so is an intercellular substance. He believes that a single cell is sufficient to form the whole length of a dental fibre, but in a later edition speaks with some hesitation on this point. Tomes, in his "Dental Anatomy," speaking of the odontoblasts, says, "The most external portion of each cell undergoes a metamorphosis into a gelatinous matrix, which is the seat of calcification, while the most central portion remains soft and unaltered as the fibril." Intermediate between the central permanently soft fibril and the general calcified matrix, is that portion which immediately surrounds the fibril, viz., the dentinal sheathe. Thus we have the dentinal fibril in its soft condition little more than the unaltered protoplasm of the cell; the dentinal sheathe, one of those peculiarly resistant substances which is on the border land of calcification; and, lastly, the matrix, a completely calcified tissue.

Waldeyer, in "Stricker's Manual of Histology," in describing the development of dentine, says, "The external layer of the germ is formed by a layer of large cells of elongated form, *provided with numerous processes*, called odontoblasts, which are arranged so as to form a kind of columnar epithelium. They are finely granular and destitute of any membrane. The ovoid nucleus is generally contained in that end which is turned toward the pulp. Three kinds of processes may be distinguished in these cells: the dentinal, pulp, and lateral processes. The dentinal processes constitute the above described dentine fibres; it need only be here repeated that from one cell several dentine fibres are frequently given off (Boll counted as many as six). Such odontoblasts with such processes are broad at the end directed toward the dentine; but, as the processes pass on, they gradually diminish to form dentinal fibres. The odontoblasts are intimately connected with each other by means of the lateral processes. The short pulp process usually springs from the cell with a moderately broad base, and is constantly connected with one of the cells lying immediately beneath the odontoblast layer." He also believes with Tomes that only the outer portion of the cells calcifies, while the protoplasm of the inner portion forms the dentine process. Wedl remarks, describing the part the

odontoblast plays, "The mode of development of the dentine is so far determined that we know positively that the dentine is developed from the dentinal cells. We may also readily demonstrate that as soon as the connection of the dentinal with their formative cells occurs, the calcification of the contents of the dentinal cells begins. That their principal and accessory processes remain attached, and are transformed into dentinal fibres; and that a constant deposition of calcareous salts into the cells takes place from the blood. By the continuous transformation of formative cells into dentinal cells, the process goes on, and new layers of dentine are deposited constantly by progressive calcification."

After thus briefly presenting these statements in a manner I have tried to make plain, I will describe my method of preparing specimens, and then the conclusions I have reached from my own observations. Having found it difficult to obtain fresh human embryos from which to work, I have made my sections from the embryos of pigs, as the processes of development are nearly identical. For these embryos I am greatly indebted to Mr. John P. Squires, of East Cambridge, from whose packing establishment many of the histologists of Boston have been supplied. I first decapitate the embryo, and drop the head into a solution of chromic acid (about one-third of one per cent.) to decalcify it. After from one to three weeks' time, during which the mixture is now and then stirred, I take the heads and wash them in distilled water; then place for twelve hours in a thick solution of gum arabic. It is then transferred to a mixture of alcohol with about one-sixth its volume of water. After a few hours, the gum which has penetrated into the substance of the tissue will be hardened throughout, and the mass can then be cut into such pieces as you wish. The embedding material is made by taking two-thirds paraffine with one-third lard. This is melted together and poured into some convenient mould, which may be made of paper. While this is still hot, but cloudy from the process of cooling, the piece of tissue selected is placed in it in such position as you may wish in making your section, and allowed to cool. Sections can then be cut across the whole with a suitably sharpened razor, or some of the more valuable instruments for this purpose—the microtome or section cutter. The cut sections are then to be placed in distilled water for a half hour to soak out the gum, and then stained in alum carmine. I cannot speak too highly of this preparation of carmine for staining embryonic tissue. It is far superior to any of the other stains that I have used, and I have used a great many. I am indebted for it to my friend, Dr. S. E. Wyman, of Cambridge, who obtained the recipe while in the laboratory of

Prof. J. Arnold, of Heidelberg, Germany. As given by Prof. Arnold, "take about one gramme of carmine in 50 cubic centimetres of a solution of alum of the strength of from 1 to 5 per cent. (best about 5 per cent). Cook it 15 minutes (boiling), filter, and then add a little thymic acid (a few crystals)."

I then take the sections I find to be worth saving and place them in this stain for twenty-four hours. Then I wash them quickly in distilled water, place them in absolute alcohol for two minutes, and then in oil of cloves for another two minutes to clarify. They are now ready to mount on a glass slide in Canada balsam and cover with a thin glass cover. A preparation of balsam in benzole is the kind I prefer; it is very handy to use. Valuable specimens for study are made without staining. We must bear in mind that a section which shows its structure with the least possible manipulation is the one to be relied upon. We must avoid shrinking the tissue by the repeated use of reagents, especially alcohol. I cannot urge this point too strongly. I mount many specimens in glycerine and water rather than use alcohol at all, and even with this you have to use care.

(To be continued.)

LESIONS OF THE TEETH IN LOCOMOTOR ATAXY.

By Dr. CH. DAVID, Paris.

THE following are the conclusions of a paper by Ch. David on the above subject, read at the Meeting of the "Association Française pour l'Avancement des Sciences."

1. We have observed a case of a peculiar alteration of the teeth in locomotor ataxy.

2. It consisted in a rapid mortification (eight months) of the anterior part of the crown of nearly all the teeth.

3. The altered portion had the consistence of soft wood and a pinkish colour. The enamel was still present, but had lost its polish.

4. Under these parts the pulp had thrown out a layer of secondary dentine. The pulp cavity was filled up in most of the teeth, and the pulp atrophied in every one.

5. The course and appearances of these changes are quite different from those of caries. We attribute them to the trophic changes caused by the medullary lesion.

6. These alterations are of the same nature as those already noticed in the nails in babes. They establish a pathological

relation between organs united by their common epithelial origin.

7. Locally these alterations are to be immediately ascribed to a functional alteration or a lesion of the dental pulp, itself reflecting the state of the anterior columns of the cord. Is not the atrophy first noticed to be compared to those changes noticed under similar conditions in the eyes?

8. The case just related, and these various considerations, lead us to attribute once more to the pulp its true physiological attribution, that of a sensory organ.

Reflections from the Surgery.

REMOVAL OF A VENOUS ANGIOINA.

By W. H. KISTON, L.D.S., R.C.S.I.

HONORARY DENTAL SURGEON ROYAL PORTSMOUTH, PORTSEA AND GOSPORT
HOSPITAL, ETC.

THIS case presented some peculiarities which may render it of interest to members of the profession. The patient, aged 59, had a dark tumour of an angiomatic nature, situated in the region of the right upper canine, about two inches in length and half an inch in diameter, which had been growing for two years, during all which time it had caused serious inconvenience, interfering both with speech and mastication. The case is specially interesting from the fact that a similar tumour had been removed from the region of the *left* upper canine some six years before by Mr. Hammond, on which occasion there was very serious bleeding, which had to be controlled by a compress of cork and a four-tailed bandage. I experienced no difficulty in removing the tumour by ligature, nor was there any bleeding afterwards. In five days it had perfectly healed, and the only unpleasant symptom at all was a slightly offensive odour, which was removed by appropriate lotions. I removed another tumour of the same nature, but arterial in its character, from a girl three years old. In this case it grew from the site of the left temporary incisor. Here, also, there was hardly any hæmorrhage.

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LONDON, AUGUST 15, 1883.

FROM the high tension of modern life, and the demands on the mental and physical vigour, which an active professional career exacts, it behoves us to consider well the therapeutical value of repose from labour.

In man, as in other animals, the healthy processes of repair, and the elimination of effete or noxious matters, are carried on with increased activity during rest. Nature herself has her regulated periods of activity and repose. The plants rest at night, in addition to having their seasons of growth and winters of stillness. Infants, we see, require a great deal of sleep, because growth is then more active; in mature life the greater the exertion, the longer should be the period of rest. Deprive a man of his needful sleep, and he becomes weak, emaciated and irritable. Give him rest and he grows, and becomes strong.

Illness is frequently brought about by the lack of the necessary repose, either of an organ or of the whole system. In no case is the necessity for repose more imperative than in that of the overwrought brain-worker—the busy professional man. In his case a holiday should not be considered a luxury, it is a stern demand for the re-accumulation of energy, and the preservation of that *mens sana in corpore sano*, so requisite in the discharge of his professional duties.

Few genuine workers can safely continue to go on toiling from year to year without a holiday. The strain on the system is too great, and nature herself finally rebels. How few cases of “brain worry”—ending as it frequently does in insanity, or in complete mental incapacity—we should find if a judicious and systematic holiday had been taken.

But let it be understood we do not mean by rest a complete cessation from labour—though that at times is absolutely

necessary—for the fairly vigorous in constitution, a complete change of activity from the accustomed channels seems to fulfil the purpose of recreation best.

We mostly require holidays, because in the wear and tear of ordinary everyday work some part of our organism is unduly and disproportionately strained, and rendered inadequate for the recovery of its healthy tone, or its full capacity for work.

The facilities for travelling now-a-days are so great, and so comparatively inexpensive, that we have no doubt many of our brethren will, during the holiday time, avail themselves of them to visit distant schools of our profession, and by the interchange of thought and ideas with our *confrères*, both on the Continent and in America, help to cement the good fellowship which should exist between the members of our noble profession all over the world. Even our hard-worked assistant, with his bicycle or more pretentious tricycle, can now enjoy his holiday in the country or by the sea-side, and, by returning refreshed and reinvigorated, can render more efficient and diligent services to his employer.

By all means then let us enjoy our holiday, and, in so doing, remember that we need not cease entirely from activity; but by diverting our energies into other useful channels, we can render our holiday compatible with valuable services to our fellow-man.

THE Annual General Meeting of the British Dental Association will be held at Plymouth, on Friday and Saturday, the 24th and 25th of August.

On Friday, business of importance to the profession at large will be transacted; papers read and discussed by some of the most eminent members; and on Saturday, some of the more recent manipulative Dental processes will be demonstrated.

The retiring President, Mr. Henry Campion, will deliver his valedictory address; and the President-Elect, Mr. C. Spence Bate, will deliver the President's Address.

The President has, with great forethought and munificence, provided a steamer, so that as many of the visitors as choose

can enjoy the luxury of a sail on Plymouth's famous Sound, whilst there are many objects of interest in and around Plymouth, for those who prefer to remain on land—the Dock-yard, the Breakwater, the Naval Hospital, the Eddystone Lighthouse, any of which will amply repay a visit.

On the whole, the meeting promises to be a most successful one. It is satisfactory to consider, that never since the foundation of the Association has a meeting been held under more favourable auspices; as there never was a time when its members have been so harmoniously united in feeling, or actuated by sentiments of such fraternal good will and social and scientific fellowship, and it is to this happy union of thought and sentiment the magnificent success and scientific advance of the Association may be mainly attributed. Should the weather prove propitious, we anticipate that the forthcoming meeting will be the most successful in the annals of the Association.

THE question of *sea sickness* seems to be still engaging the public attention. The latest authority on the subject is an eminent physician, who has practically experienced the beneficial effects of strong "black coffee," in its *prevention*. The *café noir* is best made by infusing an ounce and a half of pure coffee powder, in four ounces of boiling water for ten minutes. There are certain other precautions, however, to be adopted. The coffee should be taken long before starting in order to procure its absorption, say an hour at least, if milk is used it should be taken two hours and a half before. An easily digested meal should be taken about four hours before embarking, as it is best that the stomach should be empty. The coffee acts as a brain and nerve tonic, strengthening the sympathetic system, and rendering it less impressionable to liquid shocks. Our authority states that by this coffee plan judiciously carried out, the horrors of sea sickness may be avoided.

A DENTIST, whose skill in teeth-pulling was well known, was called upon by a wag carrying an old garden rake. "Doctor" said he "I want you to pull a couple of teeth for me." "Very well" replied the Doctor, "take a seat in that chair and show me the teeth." "Well, doctor," said the wag, "I want you to pull these two broken teeth out of this rake." For a moment the doctor was nonplussed by the joke, but

recovering himself, replied, "Well, let me have it; I might as well take the teeth from one rake as another." He did so, and demanded his fee.

HERE is a way to push trade, which I recommend to all enterprising tradesmen. It is a *bonâ fide* circumstance I assure you. A well-known gentleman, in one of the professions, who has the misfortune not to retain all his front teeth, received a letter the other day from a local dentist, with business card duly enclosed. The dentist had noticed with regret that the said gentleman required professional assistance, and he was willing to give it at cheapest rates.

For a piece of cool audacity this was neat; but it opens up a wide field for experimental sympathising. If the business of our tradesman languishes, let him go forth and hunt up the shabbily dressed ones; go home and write to this effect: "Dear Mr. Masher,—I notice with regret that your last suit is beginning to evidence decided symptoms of wear, not to say tear, and that your hat is not the latest thing worn in town. Enclosed is our scale of prices, from which we shall be happy to deduct a discount of 5 per cent. for cash."

It is said, by an eminent authority, that the cholera, at present raging in Egypt, is of the true Asiatic type; but whether it was imported from India or not it is impossible to say; but owing to the thousands of dead cattle floating in the Nile, the consumption of diseased animals as human food, and the incredible filth and dirt of the villages, a local origin may be ascribed to it.

THE College of Physicians of Dublin, amongst other general directions in cases of diarrhœa and cholera, advise that the discharges from the bowels should be disinfected and disposed of as quickly as possible. A wineglassful of the following mixture should be poured into the vessels used by the patient as a disinfectant: sulphate of iron one ounce, carbolic acid one quarter of an ounce, water to one pint. All bedding and clothing worn by the sick should be burned.

MISS CONLY died last week in America. This lady enjoyed the reputation of being the "fattest woman in the world." She was a member of a travelling circus company. She was smothered in her bed by rolling on her face, as she was unable to turn in her bed without assistance. This adipose lady weighed 497 lbs., but she fell far short of our own Daniel Lambert, who scaled 52 stones 11 lbs., or 739 lbs., nearly half as much again as the American wonder. He was

5 ft. 11 in. in height, measured 9 ft. 4 in. round the body, and 3 ft. 1 in. round the leg. He is said to have been a teetotaler, and usually slept less than eight hours a day.

As few medical men can afford the time or the money to become Members of Parliament, it is proposed—and we consider the suggestion a capital one—that a fund be raised amongst the members of the British Medical Association and others, to procure the return, and defray the expenses of, representatives of experience and ability, to watch over the interests of the profession.

MR. GLADSTONE, when asked in the House the other night how it was that the honour of baronetcy had been conferred upon two distinguished English gentlemen of great surgical and medical skill, whilst the simple honour of knighthood was considered ample reward for an Irish gentleman, who had attained great and deserved eminence in the surgical profession, in a somewhat lengthy reply stated, amongst other things, “that in Scotland there had been *no honour at all*,” and that “we regarded the medical profession as one, and the question of the nationality of the person selected for the honour as a secondary consideration, to which we can give nothing but secondary importance.”

FISH AS FOOD.—The Bristol Guardians have adopted fish dinners at their workhouse. On one day they used five hundredweight of good fresh fish from Grimsby, costing, carriage paid, £5 11s. 4d., in place of two and a half hundredweight of beef, costing, at 65s. per hundredweight, £8 2s. 6d. They gave the inmates of the workhouse twice as much fish as they usually give of beef (by weight), and they yet saved £2 11s. 2d. on the day's consumption, as compared with the meat diet.

AN action which was tried at Aberdeen Sheriffs' Court is worthy of notice. A Mrs. Williamson sued a druggist named Sayster for £750, as damages for the loss of her husband, whose death had, she alleged, been caused by one of Sayster's assistants dispensing a poisonous compound. Before the trial began the case was settled by arrangement, the defendant paying £400 to the plaintiff. Considering how many deaths occur every year through accidental poisoning—that is, by the sale of a noxious drug instead of a harmless one—it is well that every druggist should impress it upon his mind that he is liable for carelessness leading to fatal results, either on the part of himself or his assistant. The risk of punishment is, as

he knows, infinitely small; however gross the carelessness displayed, the verdict of the coroner's jury is certain to be death from misadventure, with perhaps a rider expressing a strong opinion that great want of care had been shown, but beyond this, and a censure from the coroner, nothing further is done.

The reflection, that if no serious consequences to his person are likely to arise, he may be mulcted in damages, is likely to cause chemists to be not only careful themselves, but to see that equal care will be exercised by their assistants.

Manipulative Miscellany.

All instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month, they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits, and without any intention or wish to pit one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

DR. DAVID TAYLOR'S AMALGAM.

WE have now for several months been testing a new amalgam, proportioned by Dr. Taylor, M.B., C.M., L.D.S., and Lecturer on Dental Anatomy, Andersonian University, Glasgow, with, at present, the happiest results. It mixes readily and with very little mercury, works smoothly, sets rapidly, and bears condensing and burnishing within 10 to 15 minutes. Within the short time at our disposal there have been no cases where it has appreciably changed colour or stained the teeth, and Dr. Taylor confidently believes it will never do so, unless under very exceptional conditions. We have been favoured by his formula, and from it hold the same opinion, as far as may be, without the actual and only safe test of time. With all our experimental fillings, the edges have remained tough and close to the walls of the cavities; and we willingly suggest that all will do well to test it by personal experience.

RUTTERFORD'S NEW ALVEOLAR ABSCESS SYRINGE.

Mr. RUTTERFORD has introduced a new root canal and abscess syringe and injector. It is the smallest for such purpose we have seen, and perhaps the most compact. But its

chief charm is the ingenious method by which it is always kept ready for instant use.

It is composed of a small glass cylinder, with piston rod, divided from 10 to 50 m. to indicate the amount for injections. This piston rod is tubular, and is arranged so that a gold hyperdermic injecting needle can be screwed into it, whereby it is kept perfectly free from dirt or injury. It has also a gold root canal tube, which is exceeding fine and well constructed for its purpose; this is of course interchangeable with the hyperdermic needle as occasion requires. The whole syringe is enclosed in a metal case for safety, the joint being *water-tight*, as is also the screw joint for the reserve needle. After using and perfectly cleansing the syringe, it is only necessary to fill it, the outer case and the piston tube with water, and screw the parts together to ensure the apparatus being perfectly ready for use at any time, even if laid aside for months, for the fine gold tubes being thus always moist, never can clog, and the piston sucker can likewise never dry or shrink.

Literary Notices and Selections.

A HISTORY OF DENTISTRY FROM THE EARLIEST PERIOD TO THE PRESENT TIME.

By GEORGE H. PERINE, D.D.S., New York.

(Continued from p. 720.)

THE THEORY AND PRACTICE OF THE MIDDLE AGES.

Between the time of Aristotle and Galen, who was born at Pergamus about A.D. 130, but little progress was made in medicine. Galen studied his profession at Smyrna, Corinth, and Alexandria. At the age of 34 he settled in Rome, but often made professional visits to other places. He was undoubtedly a man of great perseverance and deep thought, and has left behind him numerous professional writings, in which he describes the teeth with more exactness than any of his predecessors. His description of the form of the roots of the molar teeth is most accurate, and he asserted that the teeth were connected with a branch of nerves. He demonstrated that the teeth were not deprived of sensibility when filled, and, as a remedy for toothache, he recommended above everything the use of vapour baths, and the introduction into the tooth of a small piece of wax, pressed well into the cavity by means of an instrument. He taught that the teeth were true bones which were formed in the fœtus, but only became apparent

after birth. Galen is very justly called "the patriarch of medicine." He died at the age of 70.

Facts concerning the practice of Dentistry during the early portion of the Christian era are not easily obtained, perhaps for the reason that, unlike Galen, the majority of physicians considered its study and practice of little importance. There were not, however, wanting those who went to the other extreme and overrated the benefit the practice of the specialty would confer upon mankind generally. One would at the first appearance of pain ruthlessly extract a tooth, while another would prepare the patient for the operation by copious bleedings, purgations and general persecution of a professional character, until the offending tooth was very likely the healthiest portion of the poor victim's anatomy. As a rule, the patient was within a limited period killed either by too little or too much care

Bruno, of Longsbuns, favoured the burning or cautery treatment. With a hot iron he attacked diseased gums or aching teeth indiscriminately. He opposed extraction by means of instruments, but recommended the application to the root of a mixture of milk, thistle juice and flour, which he claimed would cause the tooth to loosen and fall out.

Gagliardi was the first who described the enamel of the teeth, and obtained sparks from it by striking it against steel.

Clopton clearly established the difference between the enamel and the dental bone, and asserted that in the latter he had discovered traces of the filaments of nerves.

A. Fabrice d'Agapendente seems to have been a practitioner of considerable merit, and did his operations very much the same as those of the present generation. Thus, when a tooth was carious, he removed the deposit with instruments, destroyed the nerve with a red-hot iron, and proceeded to fill the cavity with beaten gold. He devised many instruments, many of them quite ingenious and well adapted to their purpose.

Peter, of Spain, we are informed, had great confidence in the theories of magic, and permitted his powerful superstition to influence in a great measure his method of practice.

At the time of which we are writing, Dentistry had made comparatively but small progress as a science, although surgery was making some little advancement. Occasionally, however, an improvement upon some old and mistaken method would appear which, after some hesitation on the part of the profession, would eventually be adopted. Instruments which were but poorly adapted to the purpose for which they were intended were by degrees rendered less cumbersome and dangerous, and consequently the objection to extraction began to decrease.

The theory that caries was caused by worms, however, gained ground, and held for a long period a prominent place in the public mind. Physicians tried numerous experiments with a view to getting rid of these imaginary parasites. Some burned out the diseased teeth with the wood of the ash and afterwards filled up the cavity with honey. Others retained their faith in the inevitable red-hot iron—all having in view the same worthy object, however, that of making the residence of the worm decidedly too hot for him.

As we have before stated, it is generally believed that the Egyptians and Greeks in past ages practiced filling decayed teeth, but their successors of a later period made no attempts at operations of this character, if we except the employment of resinous and aromatic substances introduced evidently into the tooth more with a view to allaying the pain than to arresting decay.

John Arculanus is one of the first who refers to the filling of teeth with gold in the middle ages. He paid particular attention to the temperature of the teeth. When the disease was of a cold nature, he believed it was necessary to use warm substances, and *vice versa*. In order that the heat should penetrate as deeply into the tooth as possible, he broached it as far as he was able with a small instrument. Gold filling was not, however, used to any very great extent until the eighteenth century.

Beneditti, with blind and amazing crudity, gave his attention to the study of the imaginary worms and their habits. To destroy them he recommended the use of *eau di vie*, but condemns opium as an agent. Judging from the quantity of the first-named, one would be justified in the belief that the erroneous impression regarding worms existed to a large extent at the present day. Beneditti, to impress upon the mind of the practitioner the dangers attending the use of opium, wrote: "I have seen the abuse of this drug plunge a gentleman of Padua into an eternal sleep."

With a seeming anticipation of modern methods of treatment, Jean de Vigo used the file and rasp for removing caries, and filled the cavity with gold leaf. When alveolar abscesses were found, he permitted them to ripen, and then treated them with honey and ointment. He wrote very strongly against the inconceivable quackery and charlatanism prevalent in Dentistry, and demanded very justly that only surgeons, and not travelling barbers and mountebanks, should be permitted to practice it. His remarks upon this subject would in some instances be applicable at the present day. Happily, however, Dental chairs have been and are being established in the prominent medical colleges, and we are consequently

justified in believing that the child, so long estranged from its parent, will soon again be embraced in the arms of its mother; that, in fact, Dentistry will no longer be looked upon as a mere mechanical trade, but as an important arm of surgery and medical science.

About the year 1588, Gautier Henry Ryff's work appeared. It was the first book devoted entirely to Dentistry as a science. The book did not, however, contain many new ideas, and we find no mention of it in the works of those who wrote about the same time.

A work of Dental Medicine, of which Adam Bodenstein was the author, appeared also in the latter part of the sixteenth century, but its style was eccentric and its theories erroneous. A few other works appeared about the same time in Spain, Switzerland and Italy.

(To be continued.)

THE FAILURE OF FILLINGS.*

By W. C. WARDLAW, M.D., D.D.S.

IN considering the reasons for the failure of the operation of filling teeth to arrest the further progress of decay, the much-talked-of want of "compatibility" between tooth-substance (dentos, so-called), and filling materials is, to my mind, all bosh. This theory is theory alone, and nothing of a demonstrative reality.

The germ theory of caries is equally undetermined and unsatisfactory. We will not, however, discuss these theories.

On the other hand, the acid theory does satisfactorily explain all the phenomena of decay of the teeth. But gold and other filling materials are inert, having no chemical effect upon tooth substance, nor are they themselves disintegrated by chemical action in the mouth. Whence, then, comes the failure of gold and other fillings to preserve the teeth in which they are placed? I reply:

It is in the want of thoroughness in the preparation of the cavity and the finishing off of the filling by the operator. I make bold to say that a tooth filled according to well-established mechanical principles, with gold or amalgam, will be preserved indefinitely. There will be no failures to speak of. At least ninety-five out of every hundred failures are due to these causes—seventy-five per cent. to imperfectly-prepared cavities, and the other twenty-five per cent. to slovenly-made fillings.

* Read before the South Carolina Dental Association.

"Yes," you will say, "that may be the case with some, with others, but not with my operations. I am faithful, conscientious, and painstaking in these particulars." Then, my brother, you are merely ignorant of what goes to constitute "thoroughness," that is all. If you are thus "thorough," and still your operations fail, as I suppose you are willing to admit that they sometimes do, your want of uniform success is not due (as I hope to show) to innate weakness of the tooth, nor to physical defect of filling-material.

I am thus positive, only because I had my attention specially and forcibly drawn in this line. Day by day and hour by hour I have been gradually led to the point of perceiving it. It was very humiliating, when I was trying to be so careful, to have to acknowledge that I was losing teeth for the want of "thoroughness" in the preparation of my cavities; but, proceeding upon the soundness of my two propositions, the inertness of the filling-materials and the decay being chemical, I was forced to find the cause of failure where I place it. It required time and close scrutiny of the failures of myself and others to thus convince me. Lend me now the attention of unprejudiced minds, and then have the courage of your honest convictions.

We will study, as examples, approximal fillings in the superior bicuspids and molars. Here your observation will discover that the failures generally come from the extension horizontally of the decay at the cervical line. In other words, when one of these teeth, containing a solid and beautifully-polished gold filling, becomes sensitive to sweets and acids, and you begin to search for the trouble, you will find decay has penetrated to the dentine alongside the filling at the buccal or palatine side. This will most generally be the location, though sometimes it is just above the filling, higher upon the tooth. And it is due to the operator's not having extended the cavity sufficiently in these directions to include all of the original decay. Don't say it is because of the soft frail character of a poorly-organized tooth, or an incompatibility between the tooth substance and the gold. Reflect for a moment upon the mode of progress of decay in general.

Capillary attraction and other favouring circumstances predispose particular portions of the teeth to decay. The enamel often has defective spots, due to imperfect organization. These pits, depressions, cracks and fissures give lodgement to fermenting matters which furnish the acid to do the work. There is, therefore, no difficulty in understanding the inception of decay at one particular (and very small) spot. This point is the centre, or nucleus. As time goes on, it extends and enlarges. The chemical influence is strongest, most con-

centrated right here, gradually diminishing in all directions. It eats away the tooth-substance, penetrating deeper and deeper, but while it is boring internally, it is spreading superficially, gradually shading off into feather edges and often beyond the limits of unaided vision. The doodle's hole, or the ordinary funnel, furnishes an apt illustration, except that the margins at the circumference terminate too abruptly. I hope you appreciate the point. Perhaps a still better illustration would be that common one, of a stone thrown into a pond of water, with the waves propagated in all directions, but becoming smaller and smaller the further they travel from the initial centre, until they are lost in the calm, unruffled surface at the distant shore. So, bear in mind, is our decay, deepest in the centre, but becoming more and more shallow as it recedes, until no longer perceptible. This is most so in the white form of decay, less marked in the brown, and scarcely evident in the black. And notice that just in this order are our failures.

Now, if you prepare one of our supposed cavities, according to the usual instructions, by only cutting away softened tissue and irregular margins until you get smooth, solid square walls (cervical walls), you most probably will not include all the superficial decay. You have not gone far enough toward the buccal and palatine surfaces of these teeth, the direction in which the decay is predisposed to go. Nine-tenths of the thickness of your walls may be sound and solid, while the outer or superficial one-tenth may be softened, decomposing tissue, extending perhaps the one-hundredth of an inch beyond, but imperceptible to the naked eye, and yielding only to a sharp, small excavator.

We constantly hear the injunction, that in the preparation of these cavities, the vertical walls should be made parallel, or nearly so, and perpendicular to the cervical wall. This strictly followed will insure the failure of the filling every time. The transverse decay generally reaches in a narrow, superficial line entirely across the tooth, and sometimes a little around the corner, and to so shape one of these cavities, would be to cut away the entire approximal surface.

The general shape of these cavities should be, not that of a wedge with the butt uppermost, but rather that of a pear, or better still, a bell, or a broad-trimmed hat, with the upper portion much wider than the lower, and extending transversely far enough to be readily seen from both within and without. The next one you have to prepare, do it with more than usual care, and go over it again, giving it still more scrupulous attention, and when you are satisfied that you have brought it to the acme of perfection, just apply your

rubber dam, and with a magnifying-glass and a sharp examining instrument, carefully search around the entire circumference, point by point, and I will venture to say that you will discover softened edges such as you have not been accustomed to look for.

And just here allow me to say that I hold no critical examination can be made with napkins, bibulous paper, etc. The rubber dam only will secure that perfect dryness and freedom from the moisture of the breath, essential to discover that difference in colour between normal tooth-tissue and the beginning of disintegration caused by decalcification. The rubber dam and the hot-air syringe will bring to view a whitened line which the most delicate touch and keenest eye-sight would have failed to discover.

Bear in mind that this abnormal condition is superficial, more or less, and if left to fringe the borders of your cavity, is an enemy insidious enough to blight your brightest hopes and destroy your most artistic creations. It must be removed, all, every point of it.

(To be continued.)

Dental News.

MANCHESTER DENTAL HOSPITAL.

MANCHESTER, following the good example set by Liverpool, has at last recognised the necessity for an Hospital entirely devoted to Dental cases.

For the furtherance of this object, the Committee secured a large private house, No. 98, Grosvenor Street, Chorlton-on-Medlock, which, having been remodelled and adapted to the present requirements, was opened July 21st, by the Chairman, Rev. Dr. Burton.

The Rev. CHAIRMAN addressed those present, in a few brief but appropriate words, stating how he came to be connected with the movement. He then went on to say, that, "he saw in the establishment of such an institution as this, a means of supplying one of the greatest wants of the poor;" "and that he should be ever ready to do his best, in a philanthropic course, to meet their needs." The Reverend Chairman concluded his address by declaring the Hospital open—"ad Dei gloriam majoremque salutatem dentium pauperum." He then moved that "John Tomes, F.R.S., F.R.C.S., L.D.S., and Sir Edwin Saunders, F.R.C.S., Dental Surgeon to Her Majesty, be elected patrons to the Hospital."

Mr. HUET seconded the motion, which was carried unanimously.

Mr. ARMISTEAD then took the chair.

Dr. LLOYD ROBERTS proposed a vote of thanks to the retiring Chairman, and to the Committee, and said that "there could be no doubt of the necessity of such an Hospital in Manchester, alike in the interest of the poor and of medical education."

The vote of thanks was seconded by Dr. HARDIE, and the Chairman supporting it, it was carried unanimously.

The Rev. Dr. BURTON acknowledged the compliment. The services of Mr. Huet were also accorded a vote of thanks.

We append the prospectus of the new Hospital:—

THE MANCHESTER DENTAL HOSPITAL.

98, Grosvenor Street, Chorlton-on-Medlock.

SUPPORTED BY VOLUNTARY CONTRIBUTIONS.

President—Right Hon. Earl of Crawford and Balcarres, L.L.D., F.R.S.

Patrons—Sir Edwin Saunders, F.R.C.S.; John Tomes, Esq., F.R.S., F.R.C.S., L.D.S.

Honorary Secretary—Mr. Thomas North, 96, Bloomsbury Oxford Road.

Consulting Physician—D. Lloyd Roberts, M.D., F.R.S.E., F.R.C.P., London.

Consulting Surgeon—James Hardie, M.D., F.R.C.S.

Administrator of Anæsthetics—J. J. Kent Fairclough, M.D., M.R.C.S.

Consulting Dental Surgeons—Jonathan Hooton, L.D.S., Frank Huet, L.D.S.

Dental Surgeons—Monday—H. C. Small, L.D.S. Tuesday—W. Smithard, L.D.S. Wednesday—R. Walker, L.D.S. Thursday—Geo. Crocker, L.D.S. Friday—Saturday—A. C. Farnsworth, L.D.S.

CONSTITUTION AND GENERAL LAWS.

1. The Institution shall be called the "Manchester Dental Hospital," to be supported by voluntary subscriptions, for the purpose of affording the poorer classes gratuitous advice in all cases of diseases and irregularities of the teeth.

2. *School of Dental Practice.*—The hospital shall also be a School for Practical Dental Surgery, open to all students of Dentistry, under such regulations as shall be determined by the Committee of Management.

3. *List of Officers*—The officers shall consist of a President, Vice-Presidents, Life Governors, Treasurer, Auditor, Honorary Secretary, Consulting Physician, Consulting Surgeon, an

Administrator of Anæsthetics, two Consulting Dental Surgeons, and six Dental Surgeons, to be appointed annually, with the exceptions provided by Rule 16.

4. The Medical and Surgical Officers shall be nominated by the Medical and Dental Staff; but their appointments must be made within three months by the Committee of Management, and such officers shall conform to the Bye-Laws of the Institution.

5. *Hospital Practice*.—Fees, Five Guineas per annum to students of the Manchester Medical Schools and Hospitals, or any other recognized professional body empowered to grant a diploma, and pupils or apprentices of registered Dentists. Pupils and apprentices of the Honorary Dental Surgeons shall have the privilege of attending the practice of the Hospital free of charge.

6. *Dental Officers*.—Any Dental Surgeon (excepting the Consulting Officers) absenting himself from the duties of the Hospital for the space of one month, without reasonable cause assigned to the Committee, shall be considered as having resigned his appointment, and the Committee shall have full power to elect another Honorary Dental Surgeon in his stead.

7. *Future Appointments*.—All future appointments of Honorary, Medical, Surgical, and Dental Officers, shall be for a term of three years, but such officers are eligible for re-election.

8. *Hours of Hospital Attendance*.—The hours of Hospital attendance shall be from 8.30 to 10 am. daily, Sundays excepted; and the Hospital shall be open to the visits of all Dental Surgeons holding Diplomas.

DENTAL SCHOOL.—*Lecturers.*

On "Dental Surgery and Pathology."

On "Dental Anatomy and Physiology."

On "Operative Dental Surgery," by A. C. Farnsworth, L.D.S.

On "Dental Mechanics," by Frank A. Huet, L.D.S.

On "Dental Metallurgy," by H. C. Smale, L.D.S.

Fee to Lectures, one course, £8 8s.

Fee to Lectures, double course, £14 14s. (required for Diploma).

Fee to Dental Practice at Hospital £5 5s. per annum.

Fee to entire Dental Curriculum (required for Diploma) 24 guineas.

Further information may be obtained from the Honorary Secretary, Mr. Thos. North, 96, Bloomsbury, Chorlton-on-Medlock, Manchester.

MEETING OF THE BRITISH DENTAL ASSOCIATION.

THE Annual General Meeting of the Association will be held in the Athenæum, George Street, Plymouth, on Friday and Saturday, Aug. 24th and 25th, 1883.

President—Henry Champion, Esq., M.R.C.S.

President-Elect—C. Spence Bate, Esq., F.R.S., L.D.S.Eng.

Vice-President—Thomas Underwood, Esq., L.D.S.Eng.

ORDER OF PROCEEDINGS.

9 A.M.—The representative board will meet in the library of the Athenæum.

10.30 A.M.—The Annual General Meeting for business (open to members only) will assemble in the lecture room. At the termination of the Association business, the meeting will be open to visitors, and the President will deliver a valedictory address. C. Spence Bate, Esq., F.R.S., the President-Elect, will then take the chair, and deliver the President's Address. Following the address, Papers will be read and discussed. There will be no formal adjournment during the day, as it is proposed to finish the set business at one sitting.

The following papers have been promised, and they will be read in the following order:—

“On Contour Amalgam Stoppings,” by G. Cunningham, Esq., D.M.D., Harvard.

“On Hardening Dental Rubber without Flasks,” by G. Brunton, Esq.

“On the premature Extraction of the Deciduous Canines,” by S. J. Hutchinson, Esq., M.R.C.S., L.D.S.Eng.

“On Pain,” by Arthur Underwood, Esq., M.R.C.S., L.D.S.Eng.

7 P.M.—The members will dine at the Royal Hotel; tickets 7s. 6d. each, exclusive of wines.

SATURDAY.

9 A.M.—There will be demonstrations of various kinds in the ball room of the Royal Hotel.—Claude Rogers, Esq., will demonstrate the use of the electric mallet in cohesive gold filling. P. Ladmore, Esq., will fix an enamel crown. G. Brunton, Esq., will demonstrate his system of vulcanizing without flasks. A. B. Verrier, Esq., will illustrate the application of his gum sections to vulcanite work, and J. H. Garrell, Esq., the production of cases in celluloid.

N.B.—The order and time of all business may be modified according to the time at the disposal of the committee.

10 A.M.—A steamer (provided by the President) will leave West Hoe Pier and steam around the Sound, returning at 12 o'clock.

12.30 P.M.—A steamer will leave the West Hoe Pier and steam up the river Tamar, returning at 7 o'clock.

Mr. C. Spence Bate cordially invites the members with their wives or lady friends to join these excursions. Members to show their tickets on passing on board. The president, C. Spence Bate, Esq., will provide luncheon for the members at his house, 8, Mulgrave Place, from 1 until 4 o'clock on Friday.

During the Friday and Saturday there will be an exhibition of Dental appliances in the ballroom of the Royal Hotel.

Gentlemen intending to be present at the members' dinner on Friday are requested to send in their names as soon as possible to the hon. sec. of the reception committee. F. H. Balkwill, Esq., 3, Princes Square, Plymouth.

The following are some of the places of interest in and around Plymouth:—Royal Dockyard, Victualing Yard, Naval Hospital, Mount Edgcumbe Park, Citadel, Port Eliot, Saltash Bridge, Tamar River, the Breakwater, Eddystone Lighthouse, Fortifications, South Devon Hospital, Albert Hospital, and H.M.'s ships "Cambridge" and "Royal Adelaide."

Hotels.—The Grand (on the Hoe), The Royal, Duke of Cornwall, Chub's, Globe, Harvey's, Farley's, and Fowler's Temperance Hotel. The reception committee suggest that members should apply for hotel accommodation as early as possible.

JAMES SMITH TURNER, *Hon. Sec. B.D.A.*

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

At a Meeting of the Board of Examiners in Dental Surgery, held in July, Mr. Charles William Glassington, London, M.R.C.S., Eng., having passed his examination to the satisfaction of the Board, was admitted Licentiate in Dental Surgery; and the following gentlemen passed their first professional L.D.S. examination: James Main Nicol, London; James Johnstone, Nottingham; Alfred Henry Thomas, Chester; and Arthur W. Cormack, Edinburgh.

FACULTY OF PHYSICIANS AND SURGEONS, GLASGOW.

THE following gentleman was admitted a licentiate in Dental Surgery at the July sittings of the examiners: James Ellis, 24, Bennett Hill, Birmingham.

APPOINTMENTS.

E. MONTEITH, L.D.S., appointed Dental Surgeon to the Royal Alexandra Hospital for Sick Children, Brighton.

Mr. F. NEWLAND PEDLEY, M.R.C.S. and L.D.S.Eng., has been appointed Dental Surgeon to the Evelina Hospital, Southwark Bridge Road.

W. G. RANGER, M.R.C.S.E., appointed Dental Surgeon to St. Thomas's Hospital, *vice* J. W. Elliott, M.R.C.S.E., L.D.S., resigned.

THE Council of the College of Surgeons at their Ordinary Monthly Meeting, held on the 9th inst., appointed Mr. HULKE to the seat in the Board of Examiners in Dental Surgery, rendered vacant by the retirement, in rotation, of Mr. Timothy Holmes.

VACANCY.

DENTAL HOSPITAL OF LONDON, LEICESTER SQUARE.—Lecturer on Dental Anatomy and Physiology. Applications by October 1st.

Correspondence.

[We do not hold ourselves responsible for the opinions expressed by our Correspondents.]

THE DENTAL HOSPITAL OF DUBLIN.

To the Editor of the "British Journal of Dental Science."

SIR,—As I see my name has been mentioned in your issue of the present month in reference to the Dental Hospital of Dublin, I think I may claim a right to say a few words relative to the matter.

Your correspondent, "Dental Reform," truly says, "Your journal has been a medium for bringing this Dublin Dental establishment before the profession," and he ventures to ask, as one of its subscribers, "how it is that no monthly or quarterly reports are published, similar to those of kindred establishments in London and the provinces?"

The letter of your correspondent did not astonish me. I expected long since that some means would have been adopted by the legitimate profession to frustrate what I can only call a scheme to bring the profession into disrepute.

The Dental Hospital of Dublin was, as I am prepared to show, founded on a professional and constitutional basis similar to the parent establishment in Leicester Square; and

was intended to be a benefit to the profession at large as well as the public.

I regret extremely to say, that as conducted for some time past, it has been a failure, through the unwarrantable interference of interested persons, to whom it appears to me that their own individual practice is paramount to the dignity and welfare of the profession at large.

I shall venture to say, through your columns, as has been intimated by your correspondent, "Dental Reform," that I have not been slow at any time to promote the welfare of the profession. And for the success of the "Dental Hospital of Dublin" I laboured, as I believe is well known, for its success as a feeder to the status of the profession. But I am very sorry to find that its management has resulted in the reverse. It appears to me that what was intended to be a purely professional institution has degenerated into a cliquism that can neither contribute to the advantage of the public, nor the dignity of the profession.

The Dentists of England and Scotland aided liberally in the establishment of a Dental Hospital in Ireland, and every reputable practitioner owes them a debt of gratitude for their broad and sympathetic encouragement; and that they should have at this period, through your correspondent, such depressing intimations regarding the Dental Hospital of Dublin will, I believe, be as painful to legitimate practitioners of the United Kingdom as it is to

Yours, &c.,

JOHN O'DUFFY, L.D.S., R.C.S.I.,
*Member of the Representation Board, British
 Dental Association, &c.*

58, Rutland Square, Dublin, Aug. 10th, 1883.

DENTIST OR DOCTOR.

To the Editor of the "British Journal of Dental Science."

Sir,—I agree with L.D.S. and Dr. Blandy, that the ordinary general practitioner exhibits gross ignorance in Dental Surgery; he has no knowledge of the mechanical department whatever.

The Act should have made it obligatory on those practising Dentistry, to have the L.D.S., and to permit a man holding other diplomas to assume the title or office of Dentist is injurious to our profession.

It also opens the way for as great an evil as if the L.D.S. was allowed to practice surgery—and of the two, less harm would result. "M.R.C.S." says, "the public can discriminate betwixt the surgeon proper and the man assuming it," if so, what injury can follow?

But the public displays great ignorance of Dental subjects,

and it does not discriminate between the Dental Surgeon proper, and one using his title.

The case of "M.R.C.S." proves this, for if the public had the requisite amount of discrimination, they would at once see that the education of a surgeon in no wise fits him to practice Dentistry. "M.R.C.S." and the clique of "surgeons practising Dentistry," hold that the surgical qualification alone is sufficient, and the Act permitting it, pose before the public as qualified Dentists, parading their ignorance, not alone of the elegancies, but of the very fundamental principles of Dentistry.

May we not use the words of their "Lancet:" "It should not be forgotten that a medical man is unqualified, if he is not possessed of the knowledge requisite to diagnose the symptoms of the tooth disease." In a word, he is practically incompetent in all cases in which localized symptoms dependent upon a morbid condition of the teeth, or where general systemic disturbance results from such. How many *qualified* men are in such an *unqualified* position? Dentists alone can tell.

It is trash to say Dentists are unqualified because they fail to diagnose "tooth trouble," dependent upon systemic disturbance, when there are hundreds of medical men, daily, treating symptoms arising from the teeth, and utterly ignorant of their origin, and with what success? A Dentist, on the contrary, will not injure his patient's teeth, but will give suitable treatment. Should the morbid condition continue, then he will, doubtlessly, suggest a visit to his doctor, and will be in a more favourable position to receive the benefits of his doctor's treatment, the teeth having been properly attended to, and the doctor likewise have a great aid to his diagnosis. But how different is the doctor's conduct; should he fail to diagnose the seat of mischief in the first case, will he persist in his treatment? and how long does his treatment continue? Whilst he is deliberating on his diagnosis, the teeth are decaying, perhaps are lost. Finally, medical men should bear in mind that in their own department there is still a wide field for their energies, without encroaching upon the domain of the Dental surgeon.

I am, Sir, &c.,

M.B.C.M.

To the Editor of the "British Journal of Dental Science."

SIR,—Permit me to call the attention of the readers of your truly valuable Journal to the properties of Rowney's Azotine, as a nerve devitalizer. I have used it for a number of years, and never found it to fail. Its action is rendered more effectual if previously steeped in liquified carbolic acid, and a little cotton wool, dipped in copal ether, placed over it in the cavity.

Yours, &c.

J. T.

MONTHLY REPORT OF CASES TREATED AT THE DENTAL HOSPITAL OF LONDON.

FROM JULY 1ST TO JULY 31ST, 1883.

Extractions	{ Children under 14	410
	{ Adults	918
	{ Under Nitrous Oxide	411
Gold Stoppings		109
White Foil ditto		9
Plastic ditto		768
Irregularities of the Teeth treated mechanically		123
Miscellaneous Cases		138
Advice Cases		123

Total 3009

J. O. BUTCHER,
House Surgeon.

MONTHLY REPORT OF CASES TREATED AT THE NATIONAL DENTAL HOSPITAL,

FROM JULY 1ST TO JULY 31ST, 1883.

Number of Patients attended 1428

Extractions	{ Children under 14	405
	{ Adults	870
	{ Under Nitrous Oxide	212
Gold Stoppings		55
Sheets of Gold used independent of Pellets		—
Other Stoppings		260
Advice and Scaling		150
Irregularities of the Teeth		95
Miscellaneous		138

Total 2185

CHAS. W. GLASSINGTON,
House Surgeon.

ERRATA.—In the "Monthly Report of the National Dental Hospital" no extractions with nitrous oxide are recorded, whereas they had 220, which is far above the average.

To Correspondents.

Communications have been received from Messrs. J. O. Butcher (London), John O'Duffy (Dublin), "B. W. & C. M.," P. Thomjois (Brussels), W. H. Kirtton (Southsea), G. Rutterford (London), Secretary of Royal College of Surgeons (Edinburgh), Secretary of Faculty of Physicians and Surgeons (Glasgow), "N. Z." (New Zealand), E. Carey (Gosport), G. W. Glassington (London).

BOOKS AND PAPERS RECEIVED.

"Glasgow Medical Journal," "British Medical Journal," "Lancet," "Pharmaceutical Journal," "Gazette des Hopitaux," "Dental Record," "Correspondenz Blatt für Zahnärzte," "Record of the Missouri State Dental Association," "New Eng. Journal of Dentistry," "L'évenement."

British Journal of Dental Science.

No. 375. LONDON, SEPTEMBER 1, 1883. VOL. XXVI.

FLUXION DENTAIRE.

By Dr. MAGITOT, of Paris.

THE name *fluxion* is commonly given to that form of inflammation of the soft parts of the face, and of the neighbouring regions, which remains after the influence of certain lesions of the dental organ has occurred. In this respect, dental fluxion belongs to the class of *fluxions symptomatiques*, following the division heretofore adopted. It is then a symptom, an exterior manifestation, and demonstrative of serious deep lesions, of which it is but right at first to determine the nature.

The alterations of the dental organ, which in their symptomatological processes exhibit evidences of inflammation, are very diverse, and we consider it necessary on this account to enumerate chronologically the varied phases of evolution of the organ, and thus determine the succession of alterations which could bring about this consequence.

It is thus we will describe them, in the first place—the *fluxion* which precedes or accompanies the eruption of the temporary teeth with the newly born. This represents an *accident of dentition*, and it manifests itself by a simple, transient swelling of the cheek with, perhaps, general redness, and sometimes by limited patches. It is a phenomenon which is not by any means constant, and which, as well as most of the accidents attributed to dentition, proves of the greatest diversity of form and intensity. Considered under the first aspect, *fluxion* results essentially from a certain congested state of the gums, with extension to the cellular tissue of the face. The occurrence is always transitory and fugitive, for, appearing in the few hours which immediately precede the eruption of the teeth, it ceases ordinarily immediately after the eruption of the crown from the jaw. It is, in a word, a slight pathological phenomenon occasionally accompanying an act of a purely physiological order.

The different phases of the primary dentition are indifferent subjects; those of the second dentition may also give rise to

it, it is but rarely the evolution of the wisdom tooth, or of the last molar, which is on the contrary a frequent cause, but in the last case the fluxion is made a special process, to which we will return shortly.

Out of the category of dental accidents, properly so called, the most ordinary cause of *fluxion* is *alveolo dental periostitis*, and we can say that this complication represents a phenomenon almost constant in this malady.

It is necessary to remark here that the production of *fluxion*, from whatever cause it may arise, has certain general features and individual circumstances connected with it; thus one patient under the influence of the slightest disorder will be attacked with a *fluxion*, whilst another will be more difficult to be influenced, or perhaps escape altogether.

We have not here to trace the history of *alveolo dental periostitis*, let us speak only of *fluxion*. From whatsoever cause produced, it varies in intensity and gravity according to the original lesion. An affection closely resembling this, and which we have described under the name of *alveolo dental osteo-periostitis*, becomes frequently the origin of a *fluxion*.

Organic alterations of the periosteum, fungosities, cysts, tumours, are likewise the cause, which is easily explained, considering that these diverse lesions are ordinarily but different phases of the same state or complications of simple periostitis.

We will describe in our enumeration of the accidental causes of *fluxion*, certain more serious alterations of the Dental organ. We wish to speak at first of these serious troubles of nutrition or *odontomes*, and then of the organic maladies of the cement, hypertrophies and anomalous tumours. But it is useful to remark that in the latter case, the *fluxion* loses the acute and sudden nature which it had at first. For example, in true periostitis it assumes a latent appearance, it is subacute and sometimes even permanently chronic, and assumes the appearance of œdema, but without a hard core; but sometimes it is a veritable inflammatory abscess.

SEAT AND ANATOMICAL NATURE.

Be that as it may, after consideration of these various forms of *fluxion*, we should pause for a moment to consider their anatomical seat.

The most ordinary seat of this accident is the cellular tissue of the face or of the neighbouring regions; it may occur directly or immediately, or it may be the result of the propagation, by continuity, of the initial lesion. It is then a congestive condition, simple phlegmon. The abscess being thus a relatively mild and elementary form of *fluxion*, is but an inflammation of the alveolar border, sometimes of simple subacute periostitis.

But there is another condition not less frequent, in which the soft parts remain in a condition of deep and intense inflammation, consisting of a certain degree of osteitis and periostitis of the maxillary bone simultaneously. In the last case the inflammation becomes an evidence of phlegmonous osteo-periostitis of the alveolar border—it is then a serious case. We can add to these, complications of the osseous tissue, and of the periosteum of the jaw, a new element of danger, that is, the invasion by inflammation of the muscular sheaths, that is to say, of certain motor muscles of the lower jaw, but most frequently of the elevators, and especially of the masseter and pterygoid. This accident varies in intensity from simple redness, with great clamminess of the mouth, to retraction and even complete occlusion. It is well to consider the anatomical bearings of this lesion, according to the various tissues involved. We will first describe the swelling of the jaw itself, whilst the inflammation is confined to the mucous tissue. Two forms present themselves, the first consists of simple œdema of the mucous membrane without pain or redness of the parts; this is the first degree of inflammation, and it generally exhausts itself by resolution. The second is inflammation of the jaw, properly so called; it presents well-marked swelling with great pain and redness of the parts engaged.

In these two forms the jaw is alone engaged, and the swelling is then exclusively *gingival*. It is necessary to examine the buccal cavity in order to discover its existence; it is not, therefore, strictly speaking, a true inflammation. It assumes then, two forms, which we will now describe. The one most frequent consists in simple œdema of the subcutaneous cellular tissue, with severe tension and transparency, and is completely indolent; the other of phlegmonous inflammation, with elevation of temperature and with acute darting and throbbing pains, synchronous with the arterial pulse, and great tenderness on pressure.

The deeper lesions are those which we recognise in similar inflammations of other tissues. The œdema is characterised by albuminous infiltration of the cellular tissue, which having been tense and brawny before becomes soft and yielding, and finally breaks down into a gelatiniform mass. In the midst of these disturbances one cannot easily notice any change of substance, or modification of the diameter or contour of the vessels, or any leucocytes. It has the peculiar character of being produced in a few hours, for example, and of being dissipated with equal rapidity. Let us here consider the formation of this dental *fluxion*. The character of the œdema is sufficiently well marked, owing to the special disposition of the parts engaged—from the extreme laxity of the cellular

tissue of the face, which is similar in its anatomical characters to that of the eyelids, the lips, and the neck. It is thus that, independently of its gravity and of its uncertain termination, the œdema can, and does ordinarily acquire, great intensity, invading and deforming the face in from twenty-four to forty-eight hours. We may mention here that, in the acute phlegmonous form, the attack presents many important points of difference; at least in the beginning it is sensibly different.

Phlegmonous inflammation embraces, truly, many periods. In the first it is similar to the œdematous already described, but it is rapidly followed by phlegmasia and great general disturbance, increase of temperature, great pain on pressure, distension of the bundles of cellular fibres, vascular congestion, and compression of the nervous filaments already *strangled* by the thickened and swollen mass. In addition we find leucocytes, and also a fibrinous exudation occurs, which quickly solidifies and gives a sensation of hardness and resistance. Finally, if it extends to suppuration, we find certain indurated collections, or *foci*, from which the cellular elements are proliferated, and if the phlegmasia is prolonged, we find more or less fatty degeneration of the parts engaged.

To this form of dental *fluxion* is ordinarily added a complication, which we may now, with advantage, describe. We refer to the retraction of the jaws.

This accident, to which we shall revert when treating of the complications of *fluxion*, has, for its seat, almost exclusively, the elevator muscles of the lower jaw; we only find it, as a rule, in inflammations following a lesion of the inferior dental arc, it rarely occurs in the upper. We do not wish it to be understood that this form of inflammation does not occur, under modified circumstances, in the upper jaw; far from that, as we find many grave and prolonged cases in this region. But for well-known anatomical reasons the inflammatory process is restricted, because the muscular sheaths are not in immediate contact with it. However, the muscle which is almost invariably the seat of the retraction is the *masseter*, whose inferior insertions are frequently in connection with the initial dental lesions of the corresponding arc. There are cases in which the inflammation may involve the temporal and pterygoid muscles, and even extend to the ascending ramus and to the coronoid process, with the production of osteitis or osteoperiostitis of the parts engaged; but fortunately such cases are rare. With regard to the anatomical lesion which attacks the muscles under those circumstances, it consists in a process of inflammatory propagation to the laminæ separating the secondary fasciculi or *pery-*

misium. The immobility of the muscular elements and the retraction are then immediate and lasting, during the existence of this inflammatory condition.

Etiology. We have already, at the beginning of this article, pointed out that there are many affections of the dental system of which *fluxion* is an ordinary complication; but it is well here to enter into some details, and explain the matter more fully. The most common of these affections is *alveolo dental periostitis*, that is to say, inflammation of the fibrous membrane, which covers the interior of the alveolar cavity and the surface of the root. We will not here enter into a description of this malady. (See Fietkiewiez. Paris, 1877.) We will merely speak of some forms of this disorder.

(To be continued.)

A REVIEW OF THE SCIENTIFIC PROGRESS OF DENTAL SURGERY FROM 1771 TO 1883.*

By C. SPENCE BATE, F.R.S.

PRESIDENT OF THE BRITISH DENTAL ASSOCIATION; VICE-PRESIDENT OF
THE INTERNATIONAL MEDICAL ASSOCIATION, DENTAL SECTION.

WHEN in 1771, John Hunter's essay "On the Natural History of the Human Teeth" appeared, the foundation of Dental surgery was for the first time laid on a basis of physiological and pathological enquiry.

It was not to be expected that even a mind like Hunter's could, without the aid of the more modern appliances, have been able to elucidate those points of minute structural anatomy that has been determined since his day.

It is fairer to consider the state of knowledge previously to his writing his now celebrated treatise than to compare it with the strides that have been taken since. It is the pioneer in any great philosophic enquiry that deserves the honour and merit of a discovery, and to whom all that follow, no matter how great or rapid may be the progress, are indebted.

Before Hunter wrote, the chief works devoted to the subject were few, among which one that was published in 1563, three hundred years ago, by one Eustachius, under the title of "*Opusculum de Dentibus*," from which period

* Delivered at the Annual Meeting of the British Dental Association, held at Plymouth, August 24th, 1883.

the study of the diseases connected with the teeth began to attract attention.

In the year, 1582, Urbain Hemard, an intelligent French surgeon, published at Lyons a work, entitled, "*Recherche de la vraie anatomie des dents, nature et proprieté d'icelles, avec les maladies qui leur adviennent.*" Other works of less importance appeared from time to time* until 1740, when M. Fauchard published at Paris a work entitled, "*Le Chirurgien Dentiste,*" which is reputed to be the best of its kind, and in 1757, M. Bourdet published one entitled, "*De l'Art du Dentiste,*" that was thought to have much merit.

Hunter's work is the first of any note on the subject that appeared in English, and is certainly the most scientific in character that had yet appeared in any language, but his book in its relation to disease and curative treatment is due to the experience and knowledge of Dental practitioners, whose practical experience he relied on as being greater than his own, demands less of our approval than his anatomical and physiological researches.

Like every student who desires thoroughly to master the subject he undertakes, Hunter commenced his enquiries into the primary condition of things. He examined into the formation of the bones in which the teeth are implanted, then followed it up by tracing the manner in which those bones are developed, the manner in which the teeth are implanted in the human jaws, and the physiological connection between them, the genesis of the teeth and their relation to the surrounding tissues. The connection between the deciduous or first set in relation to the permanent or second set is traced out according to his own observation, and he gives the reason for shedding the teeth in a manner suggestive of correcting previous erroneous views. "Shedding of the teeth (he says) is a very singular process in the animal economy, many reasons have been assigned for it." "If the child had been so contrived as not to have required teeth till the time of the second set appearing, there would have been no occasion for a new set; but the jaw bones being considerably smaller in children than in adults, and it being necessary that they should have two grinders, there is not room for incisors and cuspidati of sufficient size to serve through life, and the first formed grinders having necessarily two small fangs, and the jaw increasing at the back part only, these two grinders would have protruded too far forwards, and at too great a distance from the centre of motion, this variation in size is likewise a

* Mr. Oakley Coles has recently published an extended list of works on Dental literature, but has omitted those that have appeared from time to time in the medical journals.

reason why the second set are formed in the socket first, and why the old sockets are destroyed."

"These circumstances," continues Hunter, "with regard to the shedding of the teeth, contradict the notion of the second set being made broader and thicker by the resistance they meet with in pushing out the first."

This last remark, evidently written in order to remove a common professional idea, as well as Hunter's own explanation, exhibits the amount of ingenuity and mental labour that was necessary to explain natural phenomena before the theory of evolution had been thought of and understood. He says, "An opinion had commonly prevailed that the first set of teeth is pushed out by the second; this, however, is very far from being the case, and were it so it would be attended with very obvious inconvenience; for were a tooth pushed out by one underneath, that tooth must rise in proportion to the growth of the succeeding one, and stand in the same proportion above the rest. But this circumstance never happens, neither can it, for the succeeding teeth are formed in new and distinct sockets, and generally the incisors and the cuspidati of the second set are situated on the inside of the corresponding teeth of the first set, and we find that in proportion to the growth of the succeeding teeth, the fangs of the first set decay, till the whole of the fang is so far destroyed that nothing remains but the neck, or that part of the fang to which the gum adheres, and then the least force pushes the teeth out. It would be very natural to suppose that this was owing to a constant pressure from the rising teeth against the fangs or sockets of the first set, but it is not so; for the new alveoli rise with the new teeth, and the old alveoli decay in proportion as the fangs of the old teeth decay, and when the first set falls out, the succeeding teeth are so far from being destroyed by their pressure, the parts against which they might be supposed to push, that they are still enclosed and covered by a complete bony socket; from this we see that the change is not produced by mechanical pressure, but is a particular process in the animal economy. The opinions controverted by Hunter were probably those of Bunon who supposed the roots of the first were destroyed by the friction of the second teeth when rising, which Van Swieten argues to be impossible, because "the second tooth whilst it rises remains enclosed in its proper membrane, until it is about to appear. Therefore a membrane is interposed between the roots of the milk tooth and the second tooth. However, the roots of the milk teeth are destroyed before the second teeth can touch them. Besides a small space is observable between the first and second tooth from which Bourdet concludes, that the roots of

the milk teeth are destroyed by some other cause, and not by the friction of the succeeding teeth. He therefore thought that some acid humour was secreted from the neighbouring parts, which might consume their roots." "I must," continues Van Swieten, "Confess it appears to me much more probable that the milk teeth are without roots," and adds, "Nevertheless some observations seem to shew that the milk teeth, if they are not shed at the proper period, or when loose are not taken out, are capable of protruding roots from their body, by means of which they often remain fixed in the jaws through life."

In discussing Hunter's remarks on these opinions, Dr. Blake in his Essay on the "Structure and Formation of the Teeth in Man and various Animals," published in 1801, says that "Hunter, however, does not seem to be acquainted with the writings of the very accurate Albinus; if he was he would be induced to give a very different description of what takes place," when he makes use of the following words, "When the incisors and cuspidati of the new set are a little advanced, and long before they appear through their bony sockets, there are small holes leading to them off the inside, or behind the temporary sockets and teeth; and these holes grow larger and larger till at last the body of the tooth passes quite through them." Albinus comes nearer the truth, for when speaking of the connexion between the permanent and temporary teeth, he says that if the temporary tooth be shed or extracted before the development of the new tooth, the latter falls into the socket of the former. "But if contrary to what commonly happens, the tooth which ought to be shed is not shed, then the permanent tooth appears behind it, and remains similar to it, fixed in its own appropriate socket."

If we turn from the earliest writers on the subject to that of the latest and most approved, we find it stated that "The observations at present at our disposal are not sufficiently numerous and varied to admit of the deduction of any general law, as regards the power by which absorption of one tissue by another is effected," and the same author goes on to say—"But I think that they point strongly to the idea that a cell structure in an active state of development is capable of appropriating or removing out of its way a material tissue."*

We may ask here what more is gained by saying that a tissue is capable of being removed or appropriated, than by saying it is absorbed. Neither expression tells us how, or by what action, the removal or absorption takes place, any more than John Hunter tells us when he says, "That we find in

* *Tomes' Dental Surgery*, p. 84, second edition.

proportion to the growth of the succeeding teeth the fangs of the first set decay."

I have long believed and maintained that the outer capsule of the developing permanent tooth, which becomes highly vascular (and this is open easily to demonstration) on the enamel surface through pressure of the newly-growing organ, against the resisting deciduous tooth, carries away the lime-salts of the latter in solution, which passes into the general circulation. That it takes place normally only where teeth succeed to each other, and when nature has not produced a succeeding permanent tooth, absorption in its true sense does not take place in the roots of the deciduous. That a parallel action takes place in permanent teeth as the result of neighbouring congested tissue, but in this latter case as being the result of disease must be considered to be abnormal.

To Hunter we are also indebted for our information of the development of the jaws and teeth in man at the earliest formation, and his description has been followed by most authors until Goodsir's researches were published in 1834.

Hunter made his observations on a fœtus of three or four months old, as the commencement of his enquiry, and says that "The depressions or first rudiments of the alveoli observable are filled with four or five little pulpy substances which are not very distinct at this age; about the fifth month both the processes themselves, and the pulpy substances become more distinct, and the anterior of which are most complete." Thirty years afterwards, Dr. Blake says "On examining the jaws of a fœtus about the fourth month after conception, I observed the rudiments of vascular membranes of twelve teeth in each jaw; Scil. those of all the temporary teeth, and those also of the anterior permanent grinders. These membranes or sacs were, even at this period, sufficiently apparent, and so intimately connected with the internal part of the gums, that they seemed derived from it, and came away with it, when torn from the groove of the jaw, leaving behind the vessels, nerves, &c. At this period there was scarcely any appearance of bony fibres shooting across from the alveolar processes to form sockets; except those intended for the incisors." Hunter appears to have held the opinion that "all the permanent teeth are formed in distinct alveoli of their own." Whereas Dr. Blake states that "The rudiments of the permanent teeth, instead of being original and independent like those of the temporary, are, in fact, derived from them, and remain for a considerable time attached to, and intimately connected with them, and this appears to have been the opinion held by Fox and Bell as late as 1835. Although Professor Arnold as far back as 1831, stated in the *Salzburg Med. Chir. Zeitung*, that, "in an

embryo at the ninth week, we may perceive in both jaws, on the projecting edges of the gums a proportionately deep furrow, with ten depressions in it; a little later we may see a flat surface, on which there are many openings, communicating with small sacs, into which fine bristles may be passed, at the third month the sacs of the second molars may be seen communicating with the cavity of the mouth by small holes. The openings of the remaining sacs are soon closed by the mucous membrane of the mouth."

"The sacs of the permanent teeth are also formed from the mucous membrane of the mouth, partly at the fourth month of foetal existence, partly towards the latter end of that period, and partly at birth."

But the researches of Professor Arnold appear to have been overlooked altogether, both in France and this country, to such an extent that they had not been noticed by Mr. Goodsir until he had completed the researches to which we are indebted for our present knowledge of the subject.

This accomplished physiologist published his researches in January, 1839, which had been in continuation since 1835.

He pursued his examinations on the embryo as early as the sixth week, and perceived between the lip and a semi-circular lobe a narrow groove, which terminates on each side, by curving inwards on the soft mucous membrane. This groove was deep, and its walls or lips were in close apposition. The pulp of the deciduous incisors and canine teeth are the productions from the external lip or ridge of the groove. The interfollicular septa, and the osseous alveolar septa, are also developed from without inwards, whereas the anterior deciduous molars, both in the upper and lower jaw are not the productions of the external lip of the dental groove, but bulgings on its floor.

The result of Goodsir's researches may be shown in the following summary:—

"1. That the deciduous teeth are found on both sides or either jaw in three divisions, molar, canine and incisive. Each of which proceeds in an independent manner.

"2. The dentition of the whole arch proceeds from behind forwards—the molar division commencing before the canine, and the latter before the incisive.

"3. The dentition of each proceeds in a contrary direction, that is the anterior molar appears before the posterior, and the central incisor before the lateral.

"4. Two of the subordinate phenomena of dentition also obey this inverse law, the follicles closing by commencing at the median line, and proceeding backwards, and the Dental groove disappears in the same direction

"5. That dentition commences in the upper jaw, and continues in advance during the most important period of its progress. The first tooth germ that appears is that of the *superior* anterior molar, and precedes that of the *inferior* anterior molar.

"6. That the germs of the permanent teeth, with the exception of that of the anterior molars appear in a direction from the median line backwards.

"7. The deciduous teeth are developed from the mucous membrane.

"8. As are also the permanent teeth, which originate independently of the deciduous, and have no connection with them.

"9. That a tooth pulp, and its sac, must be referred to the same class of organs as that from which a hair or feather is developed, viz., bulbs."

The one great point in Goodsir's researches appears to be the relation that the mucous membrane bears to the teeth. The first appearance indicating the progress of a new formation is shown in a groove, apparently sunk in the integuments, but in reality formed by the increasing growth of the surrounding tissues. At the bottom "a pencil of capillaries" commences to develop a network of blood-vessels, which, by their increase, raise a small papilla, that progresses and becomes the pulp of the future tooth, the mucous membrane still creeping up forms a sac which envelopes the pulp, and itself becomes the future periodontal covering, which in its present condition is as distinct in its genesis as it is in its endowments from the periosteum of the alveoli to which it is attached. In the pachydermous animals this is best capable of demonstration, more particularly in the larger species, as, for instance, in the elephant. Corse, Phil. Trans., 1799, informs us "that the gum is attached to the teeth, an inch above the periosteum."

Thus it is our duty to remember that however closely the two tissues, periodontum and periosteum, may be associated through life, they are distinct in their origin and antagonistic in their action. In a healthy condition they are closely connected but never united, the irritation of the one induces an inverse action in the other. Thus slight inflammatory action in the periodontum, which produces exostosis on the extremity of the root of a tooth, induces absorption of osseous tissue behind the periosteum; thus the growth of the one is the destruction of the other, but should the Dental tissues in their increasing growth be brought into contact with any of their own kind then union between them takes place, as if it were the growth of the one tissue. Thus union between the osseous

and Dental tissues cannot take place,* and the development of the one is the destruction of the other, and that vital attachment exists only where the two membranes are free from antagonising influences.

This knowledge appears to be of value in the gradually increasing importance that is attached to reparative Dental surgery.

It is now more than a hundred years since Hunter stated that "If a tooth be replaced at any time before its life is destroyed it will reunite with the cavity of the socket, and be as fast as ever." Not only does he give cases of the replantation of the same tooth, but also recommends the implantation of teeth obtained from other sources, his experience, however, appears not to be very encouraging. "The tooth," he says, "in some will begin to be fast in a few days, and the gum will cling close to it; while in others many weeks will pass before this happens, though the teeth may become fixed at last." This operation, like all others, is not always attended with success. It sometimes happens that the two parts do not unite, and in such cases the tooth often acts as an extraneous body, and instead of fastening, the tooth becomes looser and looser, the gums swells and a considerable inflammation is often kept up, terminating frequently in gumboil. In some cases, where it is not attended with success, there are not these symptoms; the parts appear pretty sound, only the teeth do not fasten and sometimes drop out. Hunter further says: "The insertion of a dead tooth has been recommended, and I have known them to continue there for years."

It has appeared to me a matter of regret that in our practice for the reduction of sets of teeth from a crowded condition to evenness and regularity, a large quantity of good and valuable material in the shape of healthy teeth is removed and made useless.

Experiments on animal grafting and as to the nature of the processes by which wounds are healed and injured parts restored, have been pursued. Among the best known are those that relate to the repair of fractured or otherwise injured bones, particularly the researches of Duhamel (1740), Sir A. Cooper (1820), and Syme (1831). In recent times such inquiries have been pursued much more completely by Ollia and others, with practical results of ever increasing value.

With the happy results in other branches of surgery before us, it appears desirable that some effort should be made to

* The passage in the second edition of Mr. Tomes' work referring to this subject in which I am quoted, I am misunderstood.

utilise some of the wasted stock for the purpose of reconstituting a set of teeth by transplanting that which was a useless organ in one person's mouth into that of another where it becomes useful.

Such a case I shall have the pleasure of exhibiting to you at this meeting. The case of the experiment is that of a young man, who having a set of teeth that is largely dependent upon my assistant's (Mr. Ladmore) skill for its present efficient condition, was advised to consent to have a lateral incisor that was much decayed removed, when we should have the opportunity of replacing it by a sound one. In the course of time a healthy young girl appeared with the required tooth, so much departing from its normal position, that it was thought desirable that it should be removed in order to obtain a well formed arch. A proper time was selected, the tooth from the girl was removed, the dental pulp was extracted and the cavity was filled with gold. The extremity of the root was cut off, and when the decayed tooth was removed from the young man's mouth the new and healthy tooth was inserted in its place. This was done in the month of January last. From the first it exhibited no abnormal features, and is now in a healthy and useful condition.

I know that in some persons there exists a prejudice against this operation, chiefly arising from the fear of inoculating disease. Of course every care should be taken, more particularly in the earlier or experimental stages in the history of any operation. But there appears to me to be no more fear of conveying disease by the system of transplantation than there is in the process of vaccination, the implantation of periosteum for the growth of bone, or the introduction of dermal tissue for the healing of ulcers.

On the intimate structure of the teeth of animals as well as of man, Hunter was at the commencement of the enquiry, led from observing the disposition of the red parts in the tooth of growing animals interruptedly fed with madder, to conclude that, as he calls it, the bony part of a tooth is formed by a series of concentric lamellæ placed one within the other. "The outer lamella," he says, "is the first formed and is the shortest. The more internal lamellæ lengthen gradually towards the fang, by which means, in proportion as the tooth grows longer, its cavity grows smaller and its sides grow thicker;" and of the enamel, he only writes of it as being strictly vertical to the pulp cavity.

Hunter appears not to have been aware that Leewenhöek, as far back as 1678, discovered that the apparent fibres of the teeth were in reality minute tubes. This discovery he determined from microscopical examination of the teeth, and

published it, together with figures of the tubes, in the transactions of the Royal Society. The dental substance of the human teeth and those taken from young hogs, is described as being formed of tubuli spreading from the cavity in the centre to the circumference. He computed that he saw a hundred and twenty within the 45th part of an inch. Leewenhöek, also shows that he was aware of a third structure, distinct from dentine and enamel, and now known by the name of *crusta petrosa* or *cementum*, but which was first accurately described by Blake and Tenon.

The tubular structure, in 1835, was demonstrated by Purkenjie and Fraenkel, and since then confirmed by Retzius, Müller, Tomes, Owen and others, through the aid of the improved conditions of the modern microscopes over those which Leewenhöek and Hunter had at their disposition, a circumstance that shows how dependent the progress of one branch of science is upon that of others.

Retzius believed that the minute tubular structure of the teeth was the means of conveying a nutritive fluid, by capillary attraction, through the entire substance of the tooth, which fluid might be derived either from the superficies of the pulp in the internal cavity of the tooth or from the corpuscles, or cells, of the external layer of the cortical substance or *cementum*, the tubes radiating from which anastomose with those of the dentine.

Professor Owen, in the introduction to his odontography as well as in his memoir on the structure of teeth, in the transactions of the British Association for 1838, corroborates, and says, "with respect to the component structures of a tooth, in addition to those usually described and admitted, there were other substances entering into the composition of teeth, and presenting microscopic characters equally distinct from ivory, enamel, and cement, and from true bone, and as easily recognisable." These several structures he shows to be relatively more or less conspicuous in different animals. The study of which not only throws light upon the structural history of the teeth, but makes us better understand the uses of parts that are not so conspicuous in the teeth of man, as for instance, there is in the tooth of the megatherium, "an unequivocal example of a course of investment of the teeth distinct from and superadded to that which proceeds from the surface of the pulp and the cavity of the fang in which it is lodged."

"With regard to the application of the tubular of structure the teeth, to the explanation of their pathology," the same writer observes, "that it is a new and fertile field which would doubtless be replete with interesting results, and

might suggest some good practical improvements in Dental Surgery."

It has been left to our late esteemed President, Mr. John Tomes, to demonstrate the true nature of the contents of the minute tubular structure of the dentine, and this he has done in a memoir on the subject read before the Royal Society in 1856, as well as in his work on Dental Surgery, which is in the hands of every student.

Professor Owen very closely approached this discovery when he says, "I once believed that they (prolonged cylindrical cells) projected into the dentinal tubes, and that the intertubular tissue was merely the intercellular substance between these elongations of cells; but I have given up these ideas, since I have observed nothing of the kind in human teeth, and since the explanation brings with it a difficulty with regard to the teeth of the pike."

About the same time that these were arguing for the tubular condition of dentine, Mr. Nasmyth attempted to prove that instead of tubes they consisted of a series of rod-like fibres that possessed a baccated condition. These opposing views and opinions arose probably from the circumstance that dead and long dried teeth were examined, the contents of the tubuli being penetrated by intermittent quantities of the submerging material, while on the other hand the structure examined was of a more recent character, in which the tubular condition was made clear to demonstration, and the immediate connection between the dentine and the central pulp was established beyond dispute by the admirable and indefatigable industry of Mr. John Tomes.

This intimate connection was long an established hypothesis in the minds of operative Dentists, arising from the fact of the exceeding sensitiveness of the dentine when brought into contact with metallic and other hard substances, during its vital contact with the general system. This latter statement induces me to draw the attention of those who have power and opportunity of observing whether there be at present any change or not going on in the structure and character of the dental tissues. The experience and observation of one life in the progress of change is but a limited period, but it appears to me that the sensitive nature of the dentine is both more common and more acute than it was in the days of my earlier experience.

When I first made sections for the microscopical examination of the teeth, the interglobular spaces that are now so common in almost every tooth that is examined were then of less frequent occurrence, and it was my custom, and I believe that of others also, to stain the sections to make these interspaces visible.

In the teeth of the Esquimaux, the Red Indian of North America, the natives of Ashantee, of New Zealand, as well as those found in the ancient barrows of England, these interglobular spaces appear not to exist, nor are they to be seen in the dentine of the best developed structure in the modern European.

It appears that a change is gradually in progress in the histology of the dentine, nor is it in the dentine only, for the character of the enamel appears to be much more frequently opaque, and the purity of the tissue as seen in the teeth of the uncivilized man is seldom to be met with in those of the modern European. Not only is the internal tissue, but the external form and character of the teeth are undergoing a degree of variation that is approximating an important feature in the history of their evolution.

By a series of comparisons extending through the whole range of vertebrate life from the lowest form to the highest type, we find a constant progressive increasing superiority of the cranium over the face and jaws, that with the gradual permanent enlargement of the brain case the proportion of the jaw becomes less.

In the crocodile, Professor Owen remarks that "almost all the skull is made up of the instruments for gratifying an insatiable propensity to slay and devour."

From reptiles, through birds and the lower mammals, we find the enlargement of the skull and the retrocession of the jaws a constant feature. "In the chimpanzee the capacities or area of the cranium and face," are, according to the same authority, "about equal." But when we arrive at man's place in nature, the relative proportion is greatly in favour of the cerebral enlargement. This difference is persistent still in the various races of mankind, and a constant law appears to prevail that the smaller the brain capacity, the more pronounced are the maxillary bones. That the difference of the facial angle between the lowest savage and the highest type of civilized man is that of 15° , or the difference between 85° in the Australian savage and the beau ideal of the classical Greek (100°).

It appears that those changes which have been in progress through æons of time are still in continuation in the present. A comparison of the human jaws when left to their unaided condition is such that at the present time they are not large enough to permit of the normal condition of teeth being arranged in their appointed arch.

(To be continued.)

ADDRESS DELIVERED AT THE FIFTH ANNUAL
MEETING OF THE WESTERN BRANCH OF THE BRITISH
DENTAL ASSOCIATION, AUGUST 23RD, 1883.

BY RICHARD ROGERS, L.D.S.*

The PRESIDENT then delivered his valedictory address. In it he said: The noiseless but rapid advance of time has again brought round the Anniversary of our Western Branch of the British Dental Association, an occasion of mutual congratulation, intercourse, and stimulus; an opportunity for looking into each other's faces, comparing notes with each other as to the experiments of the past year. Were it only for the pleasure of meeting one's friends—hearing their voices—these annual festivals would be a great boon to us all. But when there is superadded the inducement to professional culture, exchange of ideas, the confirming of that which is good and the casting out of that which is profitless and worthless;—when we take into our consideration the gain which these conversations, discussions, and communications bring to the sum total of professional knowledge and skill, then there can be little doubt that the establishment and carrying on of such associations as ours becomes a real benefit to the public at large. Now I am going to throw out a suggestion, probably not a new idea to many, although perhaps few have acted upon it hitherto:—If the public are to be enlightened as to the progress of Dental Science, we must enlighten them, and there are two ways of doing it. One is by making use of the public press; the other, by directing private conversation at suitable times into professional channels. By means of short paragraph reports of our meetings, furnished personally to the best papers in the respective localities where we reside, much may be done by way of instructing the public, by calling attention to general facts awakening some curiosity and interest as to our position. That is sufficient so far as the press is concerned. Detailed accounts of proceedings would prove uninteresting, and would fail of their purpose; whereas a brief notice serves to open the way for further information, and we shall find patients and friends enquiring what we are doing, and evincing warm desires for our advancement.

The more deeply we can identify the interests of the public with those of our profession, both in our own minds and the public mind, depend upon it, the more truly the common weal will be promoted, and the higher the position to which Dental Surgery will be raised.

* Retiring President of the British Dental Association, Western Branch.

Since our last annual meeting a great honour has been conferred on our profession. I need scarcely say that I allude to the knighthood of Mr. E. Saunders, an honour which Sir Edwin has so highly merited and so richly deserved. And I am sure I am expressing the sentiments of those around me when I say that I hope the day may not be far distant, and may we all live to see that day, when the name of John Tomes will be also added to the list of the knights of England. But should that never occur, that gentleman has the satisfaction of knowing that his name will be handed down to posterity as one of the greatest benefactors, both in a literary and a scientific way, that our profession and the world has ever known.

In conclusion, allow me to thank you for the help I have always received at your hands, and for the confidence you have reposed in me during my year of office. And though I feel I have not carried out the duties of my office as satisfactorily as I could have wished to, yet I have done my best. I now have very great pleasure in introducing my successor, Mr. Charles Gaine, of Bath, who is my personal friend and well known to you all,—a gentleman who, owing to his genial good nature and thorough knowledge of professional life, will much more ably fulfil the position of President than I have done. (Applause.) In conclusion, Mr. Rogers requested Mr. Charles Gaine, the President-elect, to occupy the chair which he now vacated.

THE FUTURE OF DENTAL SURGERY.*

BY CHARLES GAINE, M.R.C.S.E., L.D.S., Bath.

The new PRESIDENT then delivered an address, taking as his subject the future of Dental Surgery. He referred to the condition of the profession when he first entered its ranks, before the reform movement of 1856. This was the beginning of a new era, for practitioners met together from all parts of the kingdom, in London, to discuss what should be done to advance the interests of the profession. The meeting resulted in the formation of a society, called the College of Dentistry, which was destined to exist for a short time only. Had the profession been united in their efforts to establish a College of their own, it would have been chartered before now, having laws and privileges of its own, instead of being attached as an

* Address delivered before the Western Branch of the British Dental Association, at Plymouth, August 23rd, 1883.

appendage to the Royal College of Surgeons which must always be an invidious position, unless the student took a membership also. He called for the clearing away at once and for ever of the invidious distinction between Dental, Aural, and Ophthalmic surgeons, his argument being, that if it was necessary for one specialist to be fully qualified, *pari passu*, it was for another, in order to give all the same individual status as professional men. He dealt with the annexation of Dentists to the College of Surgeons, and alluded to the circumstances which led to the passing of the Dental Act of 1878. That Act, however defective it might be, was the first compulsory portal that separated the qualified practitioner morally and legally from the ignorant adventurer who had hitherto been the bane of the profession. (Applause). They must not stop here, for much remained to be done. One of the objects for which the Association existed was, he believed, to watch the working of the Dental Act. They might watch the working from without, but he thought the Medical Council had shown pretty conclusively how utterly powerless they were within. Had the profession been efficiently represented in Parliament, they would never have heard of such a momentous measure being carried as the repeal of the C. D. Act, when it had been conclusively shown how much good it had done where it had been in operation. The Medical Council had done nothing for them but spend their money (laughter and applause), and had altogether been a useless body. They were, however, allied to the medical profession, and whatever might be the future portal to medical qualification, they would have to sink or swim with it; and now that the education test must be the passport for entry into that speciality as well as medicine, he felt assured that there would be few who would begrudge the little extra time for lectures and hospital work, to enable them to become fully qualified medical as well as Dental practitioners. This done, they would hear no more of the limits of Dental surgery, so far at least, as operations in the mouth were concerned. Dealing with the future of Dental Surgery, the President said great things might be augured if they were only true to themselves, and *semper vigilans* must be their motto, or they would be left out in the cold shade with nothing better to protect their interests than the fostering care of the College of Surgeons. What influence that body might have in the future, if the Medical Bill was passed, no one could tell. One thing was certain, that all the present licensing bodies would be rendered powerless. He asked why some provision was not made for them in the preamble of the Bill. (Applause). If the diploma of the College of Surgeons after the passing of the Bill ceased to become a passport for qualification to prac-

tice surgery, why should it be permitted to grant diplomas to convey power to practice Dental surgery? He alluded to several objectionable clauses in the Bill, and said there was no doubt, that if the Bill passed, a vast change must take place in their position, at no very distant date, and they must be prepared to meet it. He hoped, in conclusion, that he had not taken too pessimistic a view of their position, and trusted they were still being carefully looked after. (Applause).

DISCUSSION ON THE THEORY OF CARIES.

(Continued from p. 753.)

Mr. HUTCHINSON: I beg your pardon. I am reading from the February No. of the "Transactions." If it is not correct I am sorry it was not corrected before it appeared before the Society. It further goes on to say, "But although vitality might modify the process to some extent, causing pathological changes, it could not protect the tissues from the action of physical laws." Mr. Sewill admits here that vitality might modify the process to some extent. Now the standpoint I wish to take to-night is that Dental caries is not entirely due to external causes, but that there is some process of vitality—I will use that word as Mr. Sewill does so, but I should myself prefer to use the term organic process—that is to say, that it is due to the presence of a living power, which I will not venture to explain, and not *entirely* due to chemical and external causes. I think that that is the view taken by the majority of those present who are in possession of the facts—I will not say the "incontrovertible" ones—as yet known about Dental caries. I want, just in pursuance of this plan of mine, to call attention to one or two facts which support this view—facts which are patent to the world; and I would ask Mr. Sewill whether he does not think that there must be some action going on in the tooth substances through the organic soft fibres of the dentine. He compares dentine to another non-vascular structure, the cornea of the eye, in which it is known there are no obvious vascular passages beyond those which form a sort of ring round the periphery of the cornea. But Mr. Sewill admits that inflammation can occur in the cornea, where there are no blood corpuscles visible; neither are there corpuscles found in the dentinal tubules, on account of their minute diameter; but the structure of the dentinal tubule is such that some process must go on in it, just as there is a process going on in the intercellular tissue of the cornea. I am not advancing any theory of my own, but simply asking

whether we must not take this into some consideration. Mr. Sewill, in his little book, I think—I should not like to misquote him again—says that it is not advisable to use very hard stoppings in six-year-old molars, because as the patient grows in years the tooth becomes consolidated. If Mr. Sewill does not say it I know it occurs in one of our valuable text-books, and I think our experience will bear us out in the fact that it is not advisable to put hard fillings into six-year-old molars, and that we do find that as life advances the tissue of the tooth does get harder, and this must be due to some “vital” process. Again, it is well known that in many cases where Dental caries attacks the teeth, a secondary deposit of dentine takes place opposite the point of commencing decay. How does the pulp know that there is caries going on at the periphery of its dentinal tubules? Must not there be some circulating influences going on through the soft fibres of the dentine which are able to communicate to the periphery of the pulp the action which is going on at the periphery of the dentine? I am only stating all this simply to oppose the view that external influences are entirely the cause of Dental caries. In conclusion, I want to read a very short extract from the paper by Dr. Norman Kingsley, of New York, which was read at the International Congress. I simply read this endorsing it as my view, and as the view, I believe, of the majority of the Dental profession, and certainly I hope of the members present to-night:—

“The teeth require as much constant nutrition as the muscles, the bones, or any other organs or tissues of the system. Teeth decay, primarily, because the nutrition of their organic structures being withdrawn, retrograde metamorphosis ensues; and secondarily, because the agencies born of diverted, improper, or inadequate nutrition are capable of producing their chemical solution. Caries is simply solution, or disorganization, of tooth constituents by agents which are always external, but which would be quite inert under other constitutional conditions. The vitality of well-organised tooth structure in a healthy body is quite sufficient to counteract the effects of any active external agents which might be temporarily present; but when nutrition is insufficient or diverted, the resisting power of its vitality inadequate, and destructive agents present, the teeth will yield at their weakest points, and caries will result.”

I had intended to allude to Mr. Milles's investigations, and also to the caries of dead teeth, but I have taken so much time, and there are so many other members who wish to speak, that I will not say any more.

(To be continued.)

THE FORMATION OF THE MATRIX OF DENTINE:
OF THE SHEATHES OF NEWMAN, AND THE FIBRIL OF
TOMES.

By R. R. ANDREWS, D.D.S., Cambridge, Mass.

(Continued from p. 756.)

Under the microscope, looking at a section cut across the enamel organ, we find it to consist of an internal and external columnar epithelial layer of cells. Just within this layer we find another, the stratum intermedium; within this the whole central part we find filled with star-shaped cells, the stellate reticulum. The cells of the stratum intermedium are intermediate in character between the bordering epithelium and the star-shaped cells. Dr. Beale asserts that he has seen a vascular net-work in the stratum intermedium. I have never been able to see it. The dentine germ is very different from the enamel organ; everything in it shows vitality. Numbers of minute blood vessels run everywhere towards the surface of the germ. Nerve bundles throw out numberless fibrils towards the odontoblasts; the tissue is crowded with life. The odontoblasts butt up flat against the enamel cells; they are never pointed, as many observers have shown. This appearance is caused by shrinkage, and is not to be relied upon.

The accepted authorities speak of an isolated odontoblast as a cell, having no membrane, with an ovoid nucleus, and also different processes which they call dentine, lateral and pulp processes. They say that the cell calcifies at its outer edges, while the protoplasm in its more central portion forms the sheathe by its partial calcification, and also the fibril, in some mysterious manner wholly unexplained. If my observation teaches me anything, it teaches me that this is all a very great mistake. I have repeatedly seen, and shown to many of my microscopical friends, these cells merging into and forming the matrix or basis substance of the dentine, its nucleus, granules, protoplasm, and all, losing their identity and forming other matrix. The processes they speak of are not really processes, of the cell, but are portions of broken fibrils that come from the deeper layers of the germ or pulp. This can be shown by careful manipulation. I have seen these fibrils running between and under the odontoblasts. They break away when the cell is isolated and look like processes, but they are not. The fibrils are not formed from the protoplasm of the cells. They look as though they came directly from a fibre from one of the nerve bundles. I have not been able to trace one entirely, as I cannot make a section on a line with their wavy course. If I could, I think I could prove my point. I have seen the fibrils between the odontoblasts—this is certain.

Frey, in his "Histology and Histo-chemistry of Man," well says that the study of the development of the teeth, even in its coarser outlines, is one of the most difficulty in embryology. As I have said, I believe time will demonstrate that the fibril which is within the sheathe is a filament from a fibril which comes from one of the nerve bundles. I have among my specimens some showing a nearly half-formed tooth of a calf; cross sections of this tooth show just within the odontoblastic layer, and near these cells, very many large nerve bundles, cut across, full of minute fibrils. The open blood-vessels, fewer in number, are nearer the central portion of the pulp. I have also seen, on compressing a thin section showing a cluster of odontoblasts attached to forming dentine, a fibril or filament running between separated cells from the formed dentine quite a little way into the substance of the pulp or germ. It will be remembered by those of you who are familiar with the writings of Boll* that he has traced fibrils from the nerve bundles running through the pulp, or germ, towards and between the odontoblasts. I have seen, and I can show these filaments running from the gerin, between the odontoblasts, up to the formed dentine. These filaments are so transparent that only the most careful examination, with properly directed illumination, will show them. I have certainly proven to my own mind that the odontoblasts lose their identity, and merging into their neighbours, form, when calcified, the matrix; that portion of the odontoblasts surrounding the fibril only partially calcifies and forms the sheathe. New layers are formed by the cells that are seen to be just within the pulp, under the calcifying layers; these become the odontoblasts and they go through the same process.

(To be concluded.)

A HISTORY OF DENTISTRY FROM THE EARLIEST PERIOD TO THE PRESENT TIME.

By GEORGE H. PERINE, D.D.S., New York.

(Continued from p. 767.)

De Coiter Valcherus described, in 1566, most accurately the dental pulp, and explained the difference between the ossification of the teeth and the bones.

* He found that by treating a perfectly fresh pulp with one-eighth per cent. solution of chromic acid, an immense number of fine fibres could be demonstrated, a great many of which projected from above the surface, as though they had been pulled out of the dentinal tubes; these pass up from a plexus of dark bordered nerve fibres beneath the layer of odontoblasts.

About 1653 Duverney published an excellent description of the teeth, observing that in their development and culture they bear a strong analogy to feathers, the nails, horn and hair.

Nerhegan was so strongly convinced of the perfect analogy between the teeth and nails, that he was led to believe that the teeth grow without cessation through life just as the nails do. Were this theory true it would give employment to a large corps of specialists whose duties would constitute the filing down of those teeth which grew so rapidly.

Diemerbrœck commits the singular fault of maintaining that the teeth are formed after birth, and that the roots of the temporary teeth give origin to the permanent ones.

Peter van Forcest, first by an experiment upon himself, discovered that the ulceration of a tooth sometimes sufficed to relieve pain, but that relief thus obtained was only temporary, and that to effect a cure in extreme cases, extraction must be resorted to; and in this connection he has given the first description of the "pelican," although that instrument had been in use a considerable period prior to his time. He did not, however, consider its use safe, owing to the danger which existed of fracturing the tooth, and he proposed as a substitute an instrument "shaped like the hoof of an ox." Whether his improvement was adopted by the practitioners of his time we are unable to say.

Antonio, of Altona, gave particular attention to the subject of odontalgia and suggested remedies in accordance with the cause of the trouble, but in all cases where the teeth were much decayed or loosened, he advised extraction.

J. André de la Croix is reported to have cured an abscess of the jaw by the removal of a decayed tooth.

Flajani was of the opinion that André's operation was among the first of this character performed.

It is said that Achille Permin Gassir extracted one of his own teeth, but with so little skill as to remove a portion of the alveolus with it, and that, owing to the profusion of the hæmorrhage which followed the operation he became exceedingly pale, and remained so up to the time of his death, which did not occur for several years thereafter.

Fabricus Hildanus, of Aquapendente, was quite successful in his method of treating fistulas, hemicrania, etc. For the extraction of molar teeth he used the "pelican," adapted to either side of the mouth, and for the front teeth an instrument resembling a crow's bill, and for the removal of roots one which acted with greater force than the "pelican." Having witnessed the injurious effects of *aqua fortis* upon the teeth, and superior and inferior maxillary, he recom-

mended in its stead the use of simple dentifrices for their preservation.

Jean Hurnius had evidently little faith in the Dentist of his time, for his advice was not to be hasty in applying to one because, as he stated, odontalgia often arises from some internal cause with which the Dentist has no acquaintance.

Strobelberger entertained, however, a more favourable opinion of the specialty, for he advised when a tooth was to be extracted that a skilful Dentist should be consulted, "as the operation is one requiring dexterity, which can only be acquired by constant practice."

Severino is reported to have been highly successful in removing tumours from the oral cavity, for which purpose he used forceps made of wood.

Claudius Deodentatus was the surgeon to the Bishop of Basel, and carried with his opinion much weight among Dentists of the seventeenth century. He opposed the use of aqua fortis in the treatment of diseases of the teeth, believing that it destroyed the teeth and the alveolar process. He advised the use of dentifrices and general treatment of the teeth and gums.

(To be concluded.)

THE FAILURE OF FILLINGS.

By W. C. WARDLAW, M.D., D.D.S.

(Continued from p. 770.)

When you have by excavating secured the requisite thickness and solidity to your walls, take a spoon-shaped excavator, and with it pass carefully over every point of the exterior margins of the cavity, scraping away this decalcifying stratum and bevelling the edges until there is not the slightest doubt of the soundness of the tissue left. It is astonishing how much dry, powdery enamel can be thus removed, even after the cavity seems to have been properly prepared.

But, I say, cut away freely and boldly; follow up the retreating enemy whithersoever it may lead you. One apparently innocent spot will often lengthen out into a dangerous trench. And lest you should, even in this way, fail to include all abnormal tissue, dress off with your separating file still another stratum of the approximal surface, and, to further meet the almost insatiable demands of the case, when finishing-up the filling use the polishing-tape as if you had left

the entire work to be done by it. Do not be afraid you will overdo the business; the danger is in the opposite direction.

Only in the type of decay known as the black is the line of demarcation between normal and abnormal tissue sufficiently defined to be readily perceived by the touch of the excavator. In the brown and white varieties it always exists, as I have indicated.

Another spot at which my failures occur in the same manner, is the buccal surfaces of the lower molars. Ah! how many times have I been disappointed and chagrined to find, twelve or eighteen months after having carefully filled such a cavity, that insidious white line creeping from my filling along the edge of the gum, and necessitating the cutting out of this exquisitely-sensitive decay. I know that it was all because I did not in the first instance extend my cutting quite far enough. There had been left a point of disintegrated enamel upon the superficial margin of my cavity. It may have been a small point, a very small one, imperceptible to the naked eye, but it was a "*point de appui*." The defective tissue had gradually broken down and been washed away, giving opportunity for further prolongation of the destruction. Point by point it extends. It never begins at a distance and approaches the filling, but at the very margin of the cavity deepens and widens, tapering to its remote limits. The trouble is that our blunted senses fail to perceive the indistinct line of demarcation.

(To be concluded.)

Reflections from the Surgery.

DROPSY OF ANTRUM.

THE patient, a boy 10 years old, had a well marked fullness of the left cheek, and a prominence of the molar process on that side. He was a delicate looking boy, and had a strumous history, but usually enjoyed fairly good health. He had been struck on the jaw by a snow-ball in the winter, and soon after he received a severe blow on the nose, which was thought to have dislocated the nasal bones. His present con-

dition was attributed to these injuries. The fullness had been gradually increasing for some time. On examination, a well marked bulging of the anterior wall of the antrum was discovered. There was no tumour in the pharynx or the nasal cavities, nor was there any difficulty in breathing through the nose. There was no softening of the bone evident. The case was regarded as arising from pressure from within the antrum.

After some time, limited softening and slight fluctuation could be detected on the root of the second bicuspid tooth. The health still continued good. The following week, crackling of the thinned bone could be distinctly felt, and evident fluctuation over the roots of the canine and the two bicuspids. A puncture was made over the root of the first bicuspid, and about two drachms of a glairy, colourless fluid escaped, and gave great relief to the local tension. In five days after, the patient again presented himself, and the whole facial surface of the bone was pliable, crackling under pressure, and the hard palate on the left side, for about half-an-inch back from the alveolar process, was bulging.

The canine and the two bicuspids were removed. Their fangs were almost absorbed. The alveolar process was soft and crumbling, and great care had to be taken not to injure it. With the removal of the teeth, a large quantity of glairy fluid escaped from the antrum through the opening made by the first bicuspid, and kept it drained. The cavity was frequently syringed out with carbolized water. The prominence at once disappeared with the removal of the pressure, and completely removed the deformity of the face. The cavity filled up, and the patient quite recovered.

There was some difficulty of diagnosis in this case in the beginning, and a more formidable tumour of a fibrous or myxomatous character was suspected. The nature of the case was at once discovered after the first puncture was made. The injuries the boy had received had a good deal to do with the formation of the cyst, but whether by closing up the opening connecting the antrum with the nasal cavity, or by inducing some morbid change in the mucous glands existing in the lining membrane of the antrum, it is impossible to say.

TETANUS.

A RARE case of tetanus has recently been under treatment at St. Bartholomew's Hospital.

A working man, aged 33, received an injury to the bridge of his nose, erysipelas supervened in a few days. He was at first treated as an out-patient, but eventually admitted. His state on admission was as follows: The lines and markings on the right side of the face were obliterated, and the right eye is wide open and cannot be closed. The mouth and tip of the nose are drawn over to the left side, and his lower jaw can only be opened sufficiently far to admit the introduction of a spoon handle. The man had no ear symptoms. Calomel and jalap were ordered, and a mixture containing 10 grains of potassia iodide. The paralysis of the face is completely neutralised by a mild galvanic current applied over the seventh nerve. The patient's breathing is considerably affected, and is of a whistling character; trismus much the same. He complains of pain in the epigastrium; the muscles of the neck and back are hardened. Ordered belladonna and chloral. The patient is now suffering severe spasm of the respiratory muscles, and was nearly asphyxiated. There is no opisthotonos, but the facial paralysis still exists with complete trismus. Severe general spasms now occurred, and the patient died. Acute tetanus conjoined with paralysis of the seventh nerve is an exceedingly rare occurrence. The muscles of the face are generally in a state of tetanic spasm, giving rise to the tetanic grin which was entirely absent in this case.

Mr. Poland, in his article on "Tetanus," in "Holme's Surgery," states that in two cases of tetanus in Guy's Hospital the orbicularis palpebrarum was involved, inducing closure of the lids. The text books do not mention any case of tetanus complicated with facial paralysis. Inflammation of the nerve within the aqueductus Fallopii would account for the paralysis.

British Journal of Dental Science.

LONDON, SEPTEMBER 1, 1883.

IN the correspondence column of our present issue is to be seen a letter from Mr. A. Coleman, F.R.C.S., which discloses a state of inertia, a condition of almost complete oblivion of the responsibilities which our noble profession entails, in the nearly entire absence from our great National Medical Museum of anything approaching a complete collection of specimens of Dental Surgery. Mr. Coleman says: "On going round the Museum recently, I was surprised and humiliated to find how imperfectly Dental Surgery was represented; and had it not been for the contributions of our great Hunter, the collection representing Dental Pathology would be simply a disgrace to us."

We find that in the Human Osteological Section of the Royal College of Surgeons' Museum there are altogether 1305 specimens. Of this number but 59 alone are exclusively Dental; and by far the greater number of these were collected and presented to the college more than a century ago by the immortal John Hunter.

Mr. Coleman further says, "that the Museum of the Odontological Society has, no doubt, the first claim on us; but still the college which first gave Dentists a recognised social status might be largely enriched without affecting the former." It is true charity should begin at home, but surely some of the members of our profession, to whom the College so magnanimously opened its portals, during the last five-and-twenty years, might in grateful remembrance of the act, give out of their superabundance such specimens of Dental Surgery and Pathology to the museum of their College as would prove that they were cognisant of the existing deficiency, and had determined to add their quota to the perfecting of the greatest medical treasury in the world.

We have too long lost sight of the practical advantages which would accrue to the profession by having a well-stocked museum, affording facilities for study to our students* and ourselves for acquiring that intimate acquaintance with Physiology and Pathology which is the only true groundwork of ultimate success in practice.

We are bound, even in the interest of humanity, to foster and encourage every means which, by stimulating to research, would tend to promote that scientific knowledge which is requisite for those who—rising above mere charlatanism—desire to make the alleviation of suffering and the prevention of pain the grand object of their lives.

Mr. Coleman must receive the commendation of every member of our profession who has its true interest at heart for attracting attention to this culpably negligent state of affairs; for considering how many difficulties a true friend has to surmount before he can bring himself to rebuke us, we ought to be very much obliged to him.

But Mr. Coleman does not rest satisfied with pointing out this lax condition of things, he suggests a remedy for them, at once practicable and complete.

He proposes that members of the profession “having preparations which are already well represented in the museum of the Odontological Society will be so good as to deposit them in that of the Royal College of Surgeons, and that he will be pleased to receive them, and will undertake that the names of the donors are duly recorded in the college catalogue.” He then appends a list of the various irregularities, abnormalities, injuries and diseases of teeth which will be most acceptable as they are most required; and appeals to the profession for a favourable response. Will his call be in vain? We hope not; rather let the answer be an outburst of generous enthusiasm and rivalry, in which each shall vie in the furtherance of our common interest.

Let us not waste our time in vain regrets over what should have been done before; but rather by the vigour and celerity

* The conservator of the Museum says, “Students of Dentistry are most welcome to visit the Museum—indeed there is no difference, as far as we understand, between them and Medical Students.”

of our action in the present, bearing in mind that *bis dat qui cito dat*, prove that we are desirous of removing this opprobrium from our noble profession which has so long existed.

THE obstructionists have been successful, and for the present, at least, the Government have been reluctantly compelled to abandon the Medical Act Amendment Bill. However, from the fact that the Government have displayed such great patience and energy on the subject of the Bill, we may rest assured that the measure will become law early next session, in spite of all such unseemly and ill-timed opposition.

THE profession will hear with deep regret that Sir Edwin Saunders was forced to undergo the serious operation of lithotritry. The operation was performed by Mr. G. Buxton Browne on the 11th of August, and the stone was entirely removed. Her Gracious Majesty the Queen has exhibited the greatest anxiety concerning her old and valued servant, and has sent repeated messages of inquiry as to his progress. The operation was completely successful, and the patient is going on well since. We believe there is every prospect of Sir Edwin being fully restored to health and strength in a short time; and that he may be long spared to the profession which he so much adorns, is the prayer of his anxious brethren.

A CURIOUS statement is made in connexion with the cholera in Egypt, which, if corroborated by observers, should attract attention. It is simply this—that birds, such as swallows and sparrows, take their departure from a district on the approach of cholera. It is also stated that this migration has been observed during the last four epidemics in Egypt.

If this statement is true, this exhibition of prescience would indicate some peculiar condition of the atmosphere, or else the presence of some objects only visible to the microscopic eye of birds. Pasteur believes that the cause of cholera is a microcosyme—but no microscopist has succeeded in detecting it. He has recommended the French Government to send out a commission to study the disease on the spot, and if possible, to trace it to its origin. Flies have been said to disseminate the disease; perhaps it is from them the birds have learned their lesson.

A CONTRIBUTOR to the "Echo" says, scientists and others write and speak of the various precautionary measures against cholera. What they insist upon I, for one, do not attempt to gainsay, such as pure water, cleanliness, fresh air—no doubt excellent immunities against that or any disease. But what I feel most positive about is that sulphurous acid fumes, such as are given off from our underground railways, will do more in preserving the health and warding off infection, than all other remedial measures suggested. Here is a hint worth consideration to those who come at all under its influence.

GAUTIER describes the alkaloid of the saliva, as follows: It is not soluble, it is not destroyed by boiling, and gives crystals when treated with gold and platinum chlorides. As to its physiological effects, it behaves like those other alkaloids which are found in the cadaver. When brought into the system it acts like serpents venom, this action being most marked when it is given to birds. Gautier does not describe the method of obtaining it, or the quantity requisite to obtain its effects.

Buzevid says he has experimented in the following way: He boiled the saliva of a healthy man of 25 years, and then collected 100 c.c., evaporated it as much as possible, and treated the residue with alcohol. After washing with alcohol and water frequently, he evaporated it to about 2 c.c., and used this as a subcutaneous injection. In the first experiment he injected as much as is contained in 15 to 30 c.c. of saliva into a pigeon, and also into a frog. There was no apparent change in either. In his second experiment, a pigeon being experimented upon, he used as much as was contained in 50 c.c., and afterwards, as was obtained from 100 c.c. of saliva, without any result. His experiments show therefore, that in the fresh saliva, in as large a volume as 100 c.c. there is not enough of the supposed alkaloid of Gautier to produce either death or an appreciable effect, even on a small animal.

LOCAL ANÆSTHESIA.—We can speak with some authority on the benefits to be derived, in some forms of neuralgia, from the application of the following: R chloral:hydr: ʒij, camphoræ ʒij. Rub well in a mortar until a fluid about the consistence of glycerine is produced, then add chloroform: ʒi and morphia sulph: 30 grs. and mix the whole. Paint on the course of the painful nerve. Of course we should not rely entirely on this application, but administer some of the usual anti-neuralgic medicines, such as quinine, quinine and iron, or arsenic, &c., internally.

DR. GRINNELL, of Dakota, has drawn a tooth from an infant seventeen days' old. The child was a female, one quarter Sioux. When it came into the world it had this tooth, a lower central incisor, fully developed; it was as large as the usual milk tooth. It had merely a fleshy attachment to the gum. It gave the child great uneasiness whilst nursing, as the tongue became abraded by every attempt of the little sufferer to draw milk from the breast. When the tooth was extracted, the child took the breast with avidity. The pain caused by nursing had undoubtedly interfered with the proper nutrition of the child.

THE Dental engine is beginning to play an important part in general surgery. Dr. F. H. Nixon has, by means of this instrument, removed an osseous tumour from the upper jaw of a young girl.

The tumour had caused considerable deformity, and extended upward to the floor of the orbit, and backward to the Pterygo-maxillary fossa. Mr. Nixon used small circular steel saws, from the mouth, and no unsightly incision was made in the cheek. The operation lasted over an hour. The miniature circular saws worked efficiently, though the space was limited. The patient is progressing favourably.

MAGITÔT says that the notchings and erosions of the teeth in inherited syphilis are not characteristic, and states that they are never found in some races frequently affected by syphilis, such as Japanese and Peruvians. He thinks that not only inherited syphilis, but also all other serious troubles of nutrition, may cause diminution in the number and size of the teeth, or delay in the period of their eruption, but never erosion. Most frequently the latter is caused by certain nervous affections of early childhood, such as infantile convulsions, especially when accompanied by general debility.

It is stated, that during the recent warm weather a number of persons in the north of London have been bitten by mosquitoes. Women and children have especially suffered, some having been almost blinded through the swellings caused by the bites of these foreign insects. It is said that large numbers of mosquitoes were brought over from America among the corn, and that they have been frequently seen to fly up when the grain is being transferred for grinding to a large steam flour mill in the vicinity.

DR. FRÜHLING, of Berlin, says it would be easy to transform corpses into stone mummies, by the use of Portland cement—

that substance when hardened not in any way indicating the organic changes going on within it. He further illustrated the subject by describing various industrial uses of lime as a preventive of decomposition. The cement in hardening takes an accurate cast of the features which it encloses, thus allowing of their exact reproduction after the lapse of centuries. It is suggested that coffins of rectangular shape should be employed, it being further considered by Dr. Fröhling that underground sepulture is needless, as the coffins soon become practically masses of stone, and can therefore be built into pyramids.

THE Philadelphia "Medical Times" records a very instructive case in which a man died of fright, and where the death narrowly escaped being attributed to ether.

The patient had a severe injury to his hip during some blasting operations. Some days after the injury a consultation was held on his case in Wilkesbarre Hospital, and it was considered necessary to administer ether. The man objected to this, and urged that his heart was weak; but it was considered necessary to anæsthetise him. This decision seemed to affect the man strongly, he breathed with great difficulty, asked for the windows to be opened, and in a few moments died.

No ether or other anæsthetic had been administered, and he had not suffered any pain from the partial examination of the hip which had been made.

No particulars of the actual state of the heart are given, but we are told a murmur was present.

There is little difficulty, however, in tracing the death to a powerful inhibitory influence over a weak heart. The case has many parallels, and a very good one is quoted by the "Philadelphia Times" of a boy in India who, mistaking in the night a harmless lizard creeping over his leg for the bite of a cobra, immediately became collapsed and died in spite of all attempts to restore him.

Had the surgeons in the first case begun to administer ether, the death would have been wrongfully attributed to that cause.

A GOOD many mistakes arise from misapprehension. For instance, a Dentist *advertises* that he will extract teeth without pain. You suppose he means the patient will suffer no pain—that is a wrong conclusion. It is the Dentist who feels no pain.

IN the year 1881 the deaths of 91 persons of 100 years

old and upwards were registered; 25 were men, and 66 were women. One man died at Holkham, in Norfolk, whose age was said to be 114 years.

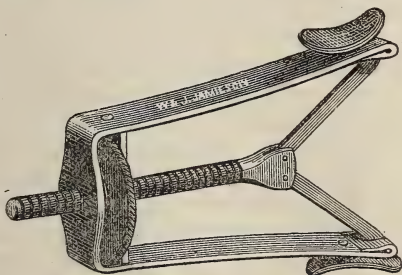
Miss DICK has bequeathed £10,000 to found a professorship either of Comparative Anatomy or of Comparative Surgery, in the Edinburgh University. She has also bequeathed £10,000 to the Veterinary College at Edinburgh, called after her brother, Professor Dick.

Manipulative Miscellany.

All instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month; they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits, and without any intention or wish to put one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

JAMIESON'S NEW MOUTH-GAG.

MESSRS. W. & J. JAMIESON have introduced a new gag,



the general outline of which is well delineated in above illustration. It is intended to be used with its body outside the mouth, and is designed for use at either side, or any part of the Dental arch, the body being turned to suit circumstances before or after the gag is *in situ*. Although so lightly made it is quite rigid, and, by means of the screw-nut, adjustable to any height from half-an-inch to two inches. When no longer required in the mouth, by reversing the screw-nut it can be easily removed.

Dental News.

OUR STUDENTS' NUMBER, 1883, will, according to our usual custom, be published on the 15th of this month. We request that all information respecting Dental Schools, &c., may be furnished to us without any further delay.

BRITISH DENTAL ASSOCIATION.

THE Annual Meeting of the Association was held on Friday, Aug. 24th, at the Athenæum, Plymouth. The PRESIDENT (Mr. C. Spence Bate, F.G.S., Vice-President of the International Medical Association, Dental Section), occupied the chair, and there were present:—Messrs. H. Mallett, Exeter; James Cumming, Glasgow; T. Cooke Parson, Clifton; Charles C. Sims, Birmingham; W. Caleb Williams, Leamington; F. H. Balkwill, Plymouth; John Faulkner, London; G. J. Rolston, Devonport; J. Fenn Cole, Ipswich; J. Marks, Newton Abbott; W. A. Hunt, Yeovil; William Penfold, London; C. Gaine, Bath; C. B. Phillips, Tavistock; R. King, Shrewsbury; G. B. Pearman, Torquay; G. Cunningham, Cambridge; G. W. White, Newport, Mon.; W. R. Wood, Brighton; E. J. Seymour, Devonport; R. H. Geldard, Plymouth; J. Rolston, Devonport; E. E. Brand, Exeter; F. Youngman, Torquay; T. G. T. Garland, Heavitree, Exeter; George Willson, London; E. E. Jewers, Plymouth; T. E. King, York; D. Watson, Torquay; Claude Rogers, A. G. Hockler, A. Cronin, London; G. C. McAdam, Hereford; J. T. Browne-Mason, Exeter; A. G. Hambly, Plymouth; W. Helzan, Bristol; James Smith Turner (the Hon. Secretary of the Association); T. Gaddes, London; R. P. Morrison, Barnstaple; W. V. Moore, Plymouth; T. F. Cullingford, London; H. D. Adkins, Kingsbridge; D. A. Wormald, Bury, Lancashire; A. G. Levason, Hereford; J. Holland, London; A. Gobell, Redhill; J. J. H. Sanders, Barnstaple; W. A. Vice, Leicester; H. W. Maiyne, Stonehouse; E. H. Williams, Manchester; T. Dilcock, Liverpool; J. Renshaw, Rochdale; C. West, London; Richard White, Norwich; S. Bennett, London; A. S. Underwood, London; J. F. Kickwick, Rugby; W. H. Waite, Liverpool; J. Dennant, Brighton; F. Canton, London; J. J. Parkinson,

London; S. Longhurst, London; Richard Rogers, Cheltenham; S. Wormald, Stockport; W. Campbell, Dundee; J. R. Brownter, Glasgow; C. H. Riches, Cardiff; M. Smale, London; O. Coles, London; G. Brunton, Leeds; F. J. Vanderpant, Kingston-on-Thames; A. Baines, Hanley; A. Rogers, Cambridge; T. Mansell, Alsager; George Beavis, Newort, Mon.; F. Segar, Newton Abbot; C. J. B. Wallis, London; H. P. Fernald, Cheltenham; H. Browne-Mason, Exeter; S. J. Hutchinson, London; R. H. Brooks, Banbury; J. R. Bate, Tiverton; J. Wells, Berwick; James Brown, South Africa; F. Ewbank, London; A. J. Wodehouse and W. H. Wodehouse, London; A. Pitzwsky, and D. E. Harding, Shrewsbury; J. Parkinson, Treasurer; with the following visitors:—Messrs. D. Wilson, Devonport; J. Wilson, Edinburgh University, L. Lewis, Plymouth; R. M. Webster, London; E. W. Fox, Gloucestershire; H. Soope, Truro; and J. W. Turvey, Plymouth.

FINANCIAL STATEMENT.

The HON. SECRETARY (Mr. J. Parkinson) read the financial statement, which showed a balance in the banker's hands of £290 11s. 5d.; arrears of subscription, £215 6s. 0d.; and probable amount to be received from advertisements and other sources up to December next, £200.

ANNUAL REPORT.

The HON. SECRETARY read the annual report. He said it was the opinion of many of the members, and of many who were not members, that from the first day of its formation the Association was fully competent to do all the work of a mature and strongly organised body. Four years was but a short period in the early history of an Association with aims such as theirs, for not only were they watching an Act of Parliament which, like all other Acts, had to go through a long period of trial, but they were endeavouring to organise a profession which was not only without any organisation whatever, but which even now was, professionally speaking, demoralised to the last degree. He pointed out that much had to be done within the Association itself and without their profession before they could take the field with any certainty of success to fight those who did them wrong. Since they met in Liverpool last year the Representative Board had tried honestly to carry out the work entrusted to them. The first business which passed from the year 1881-82 to 1882-83 was the prosecution of a Mr. Callender, an irregular practitioner, who, however, disappeared before justice could overtake him. The evidence on Dental matters given before the Royal Commission on Medical Acts, together with the valuable papers read from time to

time before the Association by Mr. Tomes, the President of the Representative Board, had been collated from the pages of the *Journal*, arranged in a compact volume, and distributed to the medical authorities of the kingdom, the universities and medical societies; and to certain members of Parliament, in view of the impending legislation in which it was sought to impair the advantages obtained by the passing of the Dental Act. When the Medical Acts Amendment Bill was drafted the Representative Board entrusted Mr. Tomes with the duty of watching their interests. The unfortunate withdrawal of the Government measure had deprived them in the meantime of the results of his knowledge and labours. The Board had also published the transactions of the Association and distributed them to all members. Since the last meeting Dr. Walker had resigned the editorship of the *Journal*, Mr. Coleman having done the same previously, and Dr. J. W. Langmore had carried on the work with a Journal Committee, of which Mr. C. S. Tomes was the president, and Mr. Coleman and Dr. Walker were members. The Benevolent Fund had often been under the consideration of the executive, and they would be asked that day to express their opinion that it was desirable to establish it. The Association was now supported by four branches—three in England (one Midland, Eastern, and Western Counties branches) and one in Scotland. It was not possible to report a larger increase of members, the number now being 494, against 470 last year, but a number had been struck off the roll through non-payment of subscription. The difficulty of getting in the subscriptions was a source of great trouble to the Representative Board. Allusion was made to the resignation of the Vice-President, Mr. Thomas Underwood, through a domestic trouble. The Auditors appointed for the current year were Messrs. Rait and Kearton, Mr. J. F. Pink, the valued Secretary, still continuing his services.

The report was on the motion of Mr. A. J. WODEHOUSE (London), seconded by Mr. EDWARD SIMS (Birmingham), adopted.

ELECTIONS.

The SECRETARY named the ten retiring members of the Representative Board, eight of whom offered themselves for re-election, and were again appointed. For London, Messrs. A. Gibblings, O. Coles, A. Coleman, A. Hill; for the Provinces, Messrs. H. Campson, Manchester; J. Dennant, Brighton; H. Browne-Mason, Exeter; T. Cooke Parson, Bristol; and the two retiring members are Mr. R. Hepburn, London, and Mr. W. H. Nicol, Leeds; and the two new members, Mr. F. Weiss, London, and Mr. W. A. Hunt, Yeovil.

LUNCHEON.

At one o'clock the members of the Association were entertained at luncheon by the Mayor of Plymouth, JOHN SHELLY, Esq., in the Western Law Court of the Guildhall, his worship having previously received the members in the Council Chamber. A very elegant repast was provided. The Mayor presided, supported on the right by Mr. Spence Bate, President of the British Dental Association, and on the left by Mr. Charles Gain, President of the Western Branch. At the close of the luncheon, Mr. Spence Bate, in a few words, conveyed the thanks of the members to the Mayor for his very kind hospitality. The Mayor, who was most warmly cheered, thanked the company very heartily for their kindness. He assured them that it had been a very great pleasure indeed to him to see them there, and he hoped their visit to Plymouth would prove a most useful and pleasant one in every way.

VISIT TO THE GUILDHALL.

Accepting the invitation of the Mayor, the members of the Association then accompanied his worship to the large hall of the Guildhall, where for about an hour they listened to a very excellent performance given on the fine organ by the talented organist, Mr. John Hele, Mus. Bac. That the music was enjoyed was evident from the very warm applause given.

BYE-LAWS.

The suggested bye-laws, as distributed to the members, were taken as read, and on the motion of Mr. J. T. BROWNE-MASON, seconded by Dr. WAITE, were adopted as the rules of the Benevolent Fund. Mr. DENNANT proposed and Mr. HUTCHINSON seconded a motion regarding the formation of a Committee of Management of the Benevolent Fund, and it was resolved unanimously that the Sub-committee of the Fund be empowered to appoint officers according to the approved rules.

PAPERS READ.

On "Pain," by Mr. A. Underwood, M.R.C.S., L.D.S.Eng.

"On the Premature Extraction of the Deciduous Canine Teeth," by Mr. S. J. Hutchinson, M.R.C.S., and L.D.S.Eng. (Dental Surgeon to University College Hospital, and the Dental Hospital of London).

"On Contour Amalgam Fillings," by Mr. G. Cunningham, D.M.D., Harvard.

"On the Attachment of the Teeth to the Alveolar Process," by Mr. Storer Bennett, F.R.C.S., &c.

On "A Process of Hardening India Rubber." by Mr. G. Brunton.

"On the Adaptation of Crowns to Molar and Bicuspid Teeth," by Mr. P. Ladmore, L.D.S.I.,

Mr. BROWNLIE described a contrivance of his own by which he had endeavoured to overcome the difficulty attaching to the breaking of springs.

ANNUAL DINNER.

In the evening the annual meeting was held at the Royal Hotel. Mr. Pearse, the lessee, had laid down an abundant spread, and it was well served to about a hundred and twenty guests. Mr. C. S. Bate presided, and in addition to most of the members named above the following were present:—the Earl of Mount Edgcumbe, the Mayor of Plymouth (Mr. J. Shelly), the Mayor of Devonport (Dr. Rolston), Mr. T. S. Bayly (Chairman of the Stonehouse Local Board), Mr. W. J. Square, Mr. I. Latimer, and Dr. J. D. Macdonald, Inspector-General of Hospitals and Fleets.

The repast over, the CHAIRMAN gave the toast of "The Queen," alluding to the fact that Her Majesty had sent her own physician, Sir William Jenner, to attend on Sir Edwin Saunders, the new knight, in his illness.—The toast was drunk with cheers.

In giving "The Health of the Prince of Wales and the rest of the Royal Family," the CHAIRMAN said he had received letters explaining absence from Sir John Lubbock—who was the one who had given them a profession—Mr. Borlase, the member for East Cornwall, and Mr. MacIver, all of whom were detained by Parliamentary duties; the Bishop of Exeter, whom distance kept away; and the Bishop of Truro, who would have been present but for a confirmation; while the Bishop of Plymouth was at a distance, and was also ill. He reminded the meeting of the fact that the Prince of Wales was closely connected with Plymouth, inasmuch as he was Lord High Steward of the town, and that among the regalia in the tower of London the only two presents preserved were from the "ever-faithful city" of Exeter and Plymouth. These facts might be taken to prove that Plymouth had been noted for loyalty from a very early day. The Prince of Wales was, he was sure, dear to the people of that town. The toast was duly honoured.

Mr. OAKLEY COLES proposed the "Army, Navy, and Auxiliary Forces" in an amusing speech, and spoke of the heartiness of the reception which had been extended to the members of the Dental Association on the occasion of their visit to Plymouth.

The Earl of MOUNT EDGCUMBE, who was received with applause, expressed his regret that he, as a civilian, should be the only person present who could be called upon to return thanks for the united services. Whatever differences of opinion there might be as to the number of our ships and

the calibre of their guns, and as to whether they would enable us to hold our own with the nations of Europe, he was not going to touch upon that subject at all. At the same time, he had the greatest possible confidence in many of the officers at the Admiralty, and he did not think that those who took a gloomy view of naval matters were at all correct. As to the *personnel* of the British navy, and the officers and men composing it, they were such as visitors from other countries would admit were a credit to this nation, and a body of men such as could scarcely be shewn by any other country. Those who visited Plymouth this week might have an opportunity of seeing, on board the training ships, the boys who formed the raw material of the navy, and they would see that these boys were a very numerous and very promising body. And the visitor would not only be able to see the raw material, but, if they had an opportunity of going on board the "Cambridge," they would there see what he might call the manufactured article. If he desired to take a stranger anywhere, it would be to this ship, and to show him these men, who, as much as anything, had made England what she is. As to the army, he was not going to enter into the question of long or short service, except to express his satisfaction that the War Office had shewn its intention to alter the principle of short service to a certain extent—that was to say, not to make short service compulsory on all men. It was going to encourage long service where a man found that he was cut out for the profession and wished to stay in it. This was a right principle, because, if recruits were enlisted when young for a short time only, there must be in the army a large number of boys, and physiologists would tell them that many of these boys would not be able to stand the wear and tear of a campaign in a healthy country, much less in an unhealthy one. Whilst it was quite right to enlist army recruits whilst young, they ought to kept a little longer in the service, in order that they might make as good soldiers as the "Cambridge" men were sailors. In other countries this difficulty was got over by conscription, which was not possible in this country, with our army all over the world. The conscription in other countries was, however, a matter for admiration rather than for contempt, remembering the way in which the young men there came forward for the national defence. In England we endeavoured to make up for foreign conscription by encouraging every citizen to take his place in the auxiliary forces, the militia, or the volunteers, and, looking at the sacrifice made by other countries, he thought every young man in this country ought to take his place in the auxiliary forces.

Mr. MACDONALD replied for the Navy, and said that he believed the service was continually improving, and he thought the sailors were as well able to fight as ever they were. He spoke of the value of the training ships, which he regarded as a necessity.

Mr. B. TREVOR, F.W., replied also on behalf of the Auxiliary Forces.

Dr. BOGUE proposed "Prosperity to the Three Towns." He said that he had come across the Atlantic to that meeting, and he was glad, as a "country cousin," to wish prosperity to the Three Towns, which had caused him great wonder since his arrival here. He spoke jocosely of the answer he received to a question regarding the manufactures of Plymouth—he was told that these were soldiers, sailors, and soap. He wished prosperity to these manufactures.

The MAYOR of PLYMOUTH in responding, said they were accustomed in Plymouth in a mild sort of way to boast of their manufactures, but as there were persons present who knew the great towns of the North, he hardly dare mention such a thing at that time. They were accustomed—humbly and under their breath—to speak of their commercial progress, their shipping, and so forth, but he was afraid there were gentlemen there who knew Liverpool and Birkenhead, and he dare not open his mouth. But they had something about which he might speak—Plymouth was a centre for excellent combinations of work and play, which were so popular now-a-days, under the title of congresses and the like—an example of which was the British Dental Association. He thought they could offer there beautiful scenery, old historic associations, and they desired also to offer a most hearty welcome. On behalf of Plymouth, one of the Three Towns—in name three, but he thought he might say one in heart and soul and interests—he thanked the members for the honour they had done to it in drinking the toast.

The MAYOR of DEVONPORT concurred in the remarks of Mr. Shelly, feeling it an honour to reply on behalf of the neighbouring borough. He assured the members that if they went to Devonport they would be glad there to show them all of interest to be seen. At Devonport they had nothing in the way of manufactures except the manufacture of sailors, and in this regard he mentioned the three training ships, the "Lion," the "Implacable," and the "Impregnable." But while they were not directly interested in manufactures at Devonport, they were interested that their soldiers and sailors were engaged constantly in protecting the commerce of England.

Mr. BAYLY replied for Stonehouse, and said in all that concerned the prosperity of the port they in Stonehouse had a

share and were benefited, and he was glad, therefore, that his town was named in connection with the toast.

The MAYOR of PLYMOUTH gave the toast of "The President." He would not venture to say anything about Mr. Bate's scientific eminence, because to attempt to praise him would be to arrogate an acquaintance with those scientific studies of which he was so bright an ornament, which he could not boast of. As to his professional skill he could only say that he was most happy to take it on trust, and he trusted he might not have need for practical experience. As to his character, he remembered that a lady once said she understood Mr. Bate was "crusty," but he thought that was a pardonable confusion arising from his studies of the *crustacea*; for in Plymouth they knew Mr. Bate's amiability and his readiness to join most heartily and kindly in every scheme for the welfare of the town, and for the increase of learning and science and all honourable studies. He was esteemed in the town, and he (Mr. Shelly) was sure the Association valued him as their President.

MR. BATE replied briefly to the compliment.

MR. A. WOODHOUSE, L.D.S. Eng., gave "The Medical Profession," and alluding to the close connection of that profession with the profession of the members of their Association, he said it must be gratifying to them to see that the Mayor of the neighbouring town was a member of the medical profession. He hoped that Sir Edwin Saunders would soon be recovered completely from his illness.

MR. W. J. SQUARE, F.R.C.S., responded first. He felt it an honour to have to respond to the toast, for he had been so devoted to his profession all his life that he considered it the greatest possible pleasure to belong to it. He referred to the evolution in the Dental profession of late years as wonderful, inasmuch as they now found enrolled in their number so large a number of men of the highest scientific acquirements, and of the highest eminence and gentlemanlike character. For his own profession he said they felt it an honour to have a number of Dental practitioners among their number, for a large number of the Dental profession had taken out the diploma they themselves possessed.

MR. G. ROLSTON, L.R.C.S., said that if the Association came at a future time to Devonport they would there meet a hearty welcome.

The Earl of MOUNT EDGUMBE proposed the toast of the evening, "The British Dental Association." He expressed his share of the satisfaction which many in this neighbourhood felt in having the honour of welcoming the members of the Dental Association to Plymouth. He should not be misunder-

stood if he said that he felt even greater and more unalloyed satisfaction in meeting these gentlemen collectively and convivially on this occasion, than he had on former occasions individually and professionally. At the same time, he thought that none who had had occasion to meet members of the profession, for the purpose to which he had incidentally referred, would feel at present that the need for those implements which their future descendants were supposed not to possess, was not sufficiently passed away to make it an eminent peril, that for lack of employment, they would cease to exist. Certainly that had not been the case that evening. He should be uttering a truism were he to say that among the various ills that flesh was heir to, there were few that created a larger aggregate of human misery than those troubles which it was the profession of Dentists to alleviate and remove; and it would be an equal truism to say, that if there were any operations that required accuracy of eye and hand, and patience, and delicate manipulation, they were amongst the operations of Dentistry. They also knew that mechanical ingenuity had been constantly brought into play to assist the profession in the manipulation that was required, and not only that, but chemical and microscopic discovery had been largely availed of. He knew that his scientific friend, their President, had taken his part in those discoveries, in connection with his antiseptic treatment; and, when they considered this, he felt quite sure that nobody could deny that Dentistry had taken a high position among the practical sciences. He therefore thought it was a matter of surprise that the Dentists Act, which became law in 1878, was not passed sooner. The object of that law was by a system of examination and registration to see that the public were not mangled by unqualified practitioners, and the more important that the profession became, the more important it was that those who practised it should be qualified practitioners. He believed that the Dental Association, which was formed two or three years since, had for its object to see that the provisions of that Act were fairly and fully carried out; also to raise the status of the profession, to increase the *esprit de corps* amongst members of the profession, and, he might say, to introduce a certain amount of freemasonry—all these things which in any profession ought to, and invariably did, increase its general efficiency. It was often said that the wealthier and more luxurious classes suffered from dental disease more than the poor—those who worked harder and fared more simply. He could not take that for granted, because he thought those present would bear him out in saying that there was a great deal of suffering among the poor from this cause, and he was

sure that this Association would make it its pride to follow in the footsteps of the surgical and medical profession in doing all they could to extend the benefit of its action to the poor, either by Dental dispensaries or otherwise. It was not only pain and discomfort from which the poor often suffered. He was speaking to them just now about the navy, and the boys being trained for it in this locality. A rather sad case came before him the other day. A lad he knew and had taken great interest in, was the son of a sailor, and was anxious from his earliest days to follow his father's profession. He got a nomination for the Greenwich school where he distinguished himself, was made petty officer, had a high character, and proved in physical development that he was efficient for the purpose required, getting a first prize for athletics. He joined one of the training ships at Plymouth, and there found that by an inexorable law—excluding a boy who had four defective teeth—he could not be admitted into the navy, and his hopes were wrecked in consequence. He (the noble Earl) could not help hoping that some circumstance would arise which would remove the difficulty, but he mentioned this to show that, if possible, prevention was better than cure; and he hoped the Dental profession would turn their attention, as much as they could, to any information they could give to the people as to saving the teeth in early years. Why should there not be some handbook, like Professor Parke's on sanitary matters, on this subject, for circulation amongst the poor? He hoped that one day something would be done in this direction. His business there, however, was to join with those who had received the members of the Association, in offering them a hearty welcome, and to give his thanks to the President and Officers for the kind hospitality which they, as guests, had received.

Mr. J. SMITH-TURNER (Honorary Secretary) responded to the toast. They had heard the Association had grown out of the Dentists' Act, and he should like to explain that the Association claimed that that Act had given to the Dentists a professional position which they wished to assert, though not in any violent or ostentatious manner. The curriculum through which the members of the Dental profession must pass was subject to somewhat of contumely and reproach; but he claimed that it was equal to the curriculum which was necessary for a full medical diploma. It was equal in this way—it took rather more time to get through, and cost rather more money. But that curriculum was arranged for a certain object, namely, making men what they professed to be—Surgeon-Dentists. And consequently, the students had to break off their medical and surgical studies after a certain

period in order to become acquainted with that particular branch of the surgical art which they intended professing. That course of study had been laid down after mature consideration by the wisest and best of the Dental and surgical profession, and they were bound to accept it and honestly fulfil it. If their position as Dentists hitherto had been one of watchful reserve, he thought it was better they should be reserved and watchful than reserved and careless. The report that had been read that day shewed that the Association had accomplished a large amount of work necessary for the elevation of their profession during the past twelve months. If they had maintained a watchful reserve it was more particularly in regard to impending legislation, and while upon that topic he should like to remind them that in the Medical Act Amendment Bill there was an important provision in relation to Dentists, and which he regretted had fallen through. He had to thank them very much for the manner in which they had received that toast, and the Earl of Mount Edgumbe for proposing it. He had to thank the men of Plymouth for the way in which they had received the Association. They had shown to-night the same spirit they showed some 200 years ago, when

"Forthwith a man at every gun was placed along the wall,
The beacon blazed upon the roof of Edgumbe's lofty hall,
Many a light fishing craft went out to pay along the coast,
And with loose rein and bloody spur rode inwards many a post."

In other words they were equally ready to give a warm reception to strangers now as they would have the Spaniards in those old days had they come to Plymouth.

Mr. C. GAINÉ also briefly replied.

Mr. J. F. COLE, in returning thanks, said he thought the Association was calculated to elevate their profession and promote that union among them which was strength.

Mr. ROFF KING also responded.

The MAYOR of DEVONPORT, in the absence of Mr. Swain, gave "The Officers of the British Dental Association and Branches."

Mr. J. PARKINSON replied. The work of the officers had been, he could assure them, a labour of love, and he hoped the same spirit would animate the successors of those who now held office.

Mr. BROWNE-MASON thanked those present for the compliment they had paid the officers. There were two Dental hospitals in Devonshire, and in that at Exeter there were very nearly 6,500 operations performed last year. But these hospitals could not be maintained without the "sinews of war,"

and he trusted a hint in this direction would give a stimulus to the subscriptions.

Mr. OAKLEY COLES gave "Prosperity to the Dental Benevolent Association," and the sentiment having been responded to by Mr. DENHAM, the proceedings terminated.

BRITISH DENTAL ASSOCIATION.—WESTERN BRANCH.

THE Fifth Annual Meeting of the Western Branch of the British Dental Association was held at the Athenæum, Plymouth, on Thursday, Aug. 23rd—RICHARD ROGERS, Esq., L.D.S.I. (the retiring President), in the chair. The following members were present:—Mr. Charles Gainé, M.R.C.S.E., Bath, the President-Elect; Messrs. T. C. Parson, M.R.C.S., L.D.S.E., Torquay; C. Spence Bate, F.R.S., L.D.S.E., Plymouth, Vice-Presidents; J. R. Bate, Tiverton; F. H. Balkwill, Plymouth; Jno. Faulkner, London; T. G. T. Garland, Exeter; R. H. Geldard, Plymouth; A. G. Hambly, Plymouth; W. A. Hunt, Yeovil; E. E. Jewers, Plymouth; H. Mallett, Exeter; J. Marks, Newton Abbot; H. B. Mason, Exeter; G. C. McAdam, Hereford; E. L. Keys, Plymouth; P. Ladmore, Plymouth; Jas. Parkinson, London; A. Pitowski, Barnstaple; W. Richards, St. Austell; E. J. Seymour, Devonport; A. Sleemin, Plymouth; W. R. W. Wood, Brighton; A. G. Leveson, Hereford; J. T. Browne-Mason, L.D.S.E., Exeter, Hon. Treasurer; W. V. Moore, Plymouth, Secretary; also the following visitors:—Messrs. G. Brunton, Leeds; H. Blandy, Nottingham; W. Penford, London; G. H. Williams, Manchester; W. Campbell, Dundee; J. Gaddes, London; J. J. H. Saunders, Barnstaple; E. A. Bogue, New York; H. W. Brooker, Banbury; I. Latimer, Plymouth; G. Beavis, Newport, Monmouthshire; G. Cumming, Cambridge; and A. Baines, Hanley.

The HON. TREASURER (J. T. Browne-Mason, Esq., L.D.S.E., Exeter) read his account, which showed the balance from last year to be £29 5s. 5d., and subscriptions £19 15s., making a total of £49 0s. 5d. The expenditure was £19 13s., leaving a balance in hand of £29 7s. 5d.

The HON. SECRETARY (W. V. Moore, Esq., Plymouth), also presented the Report of the Council for 1883. It stated that since the commencement of this branch of the Association in Plymouth, April 30th, 1879, some progress had been made. In August 4th of the same year, at the Exeter Annual Meeting, 44 gentlemen who had signed the obligation paper were enrolled as members. This number had

since increased to 90, which proved a decided advance. There was little doubt that the general influence had resulted in preserving an honourable, generous, and good feeling amongst members, which it was to be hoped all would studiously maintain towards those who combined to join their ranks, that the profession generally might see they meant to carry out the motto, "Onward and upward." The Council had to report that the bye-laws were altered, as proposed and carried at the Cheltenham meeting of August 5th, 1882. It was then also resolved that the papers read at annual meetings should be the special property of the British Dental Association, for publication in their journal, at the discretion of the Committee. Fourteen gentlemen were admitted as members at the Cheltenham meeting, and three at a Council meeting, held in Exeter, March 24th, 1883. For the general convenience of members, it was proposed at the last Council meeting, that the annual meeting of this branch should be held in Plymouth, August 23rd, one day before the annual general meeting held in the same place; C. Gain, Esq., M.R.C.S. to be president, and W. A. Hunt, Esq., L.R.C.P., M.R.C.S., to be president at the annual meeting, to be held in Torquay in 1884. There had been some cases of advertising reported to the Secretary, which had ceased by giving a direct caution. One had actually commenced practice without having any qualification, and not being registered, who, after being advised by the Secretary, had abandoned the attempt, at the same time professing ignorance of the existing law. It would be well if members would report any cases of existing indiscrepancies, and members should always understand that they had nothing to do with those who choose to advertise and keep themselves separate from the Association. This system would no doubt cease in the course of time, when low practice, it was to be hoped, would be only a matter of history.

The PRESIDENT said it was now their duty to pass the new bye-laws, of which he believed each member had received a copy. On the proposition of Mr. SPENCE BATE, seconded by Mr. BALKWILL, the bye-laws were then adopted without discussion.

The HON. SECRETARY announced that five new members had that morning been elected, viz., Messrs. John McCaigland, Exeter; Elias C. Keys, Plymouth; H. W. Mayne, Plymouth; J. J. Saunders, Barnstaple; and E. T. Dewy, Weston-super-Mare. These gentlemen were unanimously approved.

It was decided, on the proposition of Mr. SPENCE BATE, seconded by the PRESIDENT, "That the next annual meeting should be held at Torquay, with Mr. Hunt as the President,"

it being announced that that gentleman had accepted the office.

The PRESIDENT (Richard Rogers, Esq., L.D.S.) then delivered his valedictory address (see p. 795).

Mr. BALKWILL proposed a cordial vote of thanks to Mr. Rogers, for the very satisfactory way in which he had discharged the duties of his office during the past year.

Mr. SPENCE BATE seconded, remarking that Mr. Rogers had carried out the duties so well that he had made it difficult for others to follow him.

The retiring PRESIDENT, in acknowledging the compliment, said so long as he lived he should take an interest in his profession, and should do his little towards helping it to attain the position of one of the first professions in the land.

The new PRESIDENT (Charles Gaine, Esq., M.R.C.S.E., L.D.S.) then delivered an address (see p. 796).

Mr. E. SPENCE BATES (rising): I may inform you that the Medical Bill was quashed last night in Parliament. (Applause).

A vote of thanks was accorded to the retiring Secretary, Mr. W. V. Moore, the Treasurer observing that he had been of immense service to the society.

In reply, Mr. MOORE said his work had been a great pleasure to him. He felt that to progress satisfactorily new blood should be introduced into the secretaryship, and he therefore gladly retired.

Mr. H. BROWNE-MASON, Exeter, was elected Secretary for the ensuing year.

Mr. F. H. BALKWILL, L.D.S., contributed a paper on the treatment of pulpless teeth. He said the correct and intelligent treatment of pulpless teeth was first placed on a sound basis when Mr. Lister commenced his theory of antiseptic surgery. The Dental profession immediately applied the practice to the treatment of pulpless teeth with great success. The main difficulty was in meeting the operative details. The question was raised as to whether it was always necessary to remove the entire dental pulp after the application of arsenic, and a case was quoted to show that this was not always necessary. The method used by the author was described by Mr. Balkwill, as well as some typical cases, and the materials used in filling the pulp cavity were shown. An experiment which had been undertaken to show whether gas was evolved in the pulpless cavity, was conducted, and it was seen that the amount was exceedingly small. The desirability of utilising firm roots of masticating teeth in a more

general manner by placing artificial crowns upon them was suggested, as being indicated for the future by the power which the antiseptic methods of treatment gave Dentists in dealing with them.

Remarks on Mr. Balkwill's paper were made by Mr. Parson, Mr. Hunt, Mr. Blandy, Mr. Gaddes, and Mr. Spence Bate.

Dr. HUNT, of Yeovil, read a paper on "Neuralgia." He illustrated the anatomy and physiology of the fifth pair of nerves, showing the intimate relationship between all the organs of special sense. He illustrated also its action on the blood vessels, and its connection with the spinal cord, giving many illustrations of the singular phenomena which are witnessed constantly when one or more branches are irritated from any cause.

Mr. MORRISON asked if Dr. Hunt considered the ganglions acted as reflectors of pain, or accumulators.

Dr. HUNT replied—As accumulators.

Mr. SPENCE BATE remarked that sympathetic feeling sometimes went beyond the origin of the pain. He mentioned the case of a gentleman who had an affected wisdom tooth, which was perhaps imbedded in nerve pulp, for what he knew. This gentleman told him he had been under medical treatment for what he called neuralgia in the thumb. When he asked his doctor if it might be anything to do with his teeth, the doctor laughed at him, as most persons would. But the gentleman said he felt a peculiar numbness in his tooth, on one side, which at times caused severe pain. He (Mr. Bate) destroyed the nerve in the tooth and filled it, and immediately he did so the pain went away. He did not see the gentleman again for two or three years, and then he complained of a similar pain in the thumb of the opposite hand. He treated this in a similar way, and the pain disappeared. Two or three years later the same gentleman came to him complaining of pain in his teeth, and directly he began to operate on them the pain went to his thumb. He asked Dr. Hunt if he could explain this; if so, it was more than he (Mr. Bate) could.

Dr. HUNT said, it was quite possible that there were little islands in the spinal cord, and that when these islands were in a state of irritation there would be a reflex disturbance, by which pain would be carried from the teeth down to the thumb. He mentioned the case of a lady who had been under treatment by a physician, but she got worse rather than better. (Laughter). The nature of her complaint was neuralgia of the uterus. A tooth which had been bothering the lady was removed. During its extraction the pain in the

uterus was intense, but as soon as the tooth was completely gone there was no more pain. This was, doubtless, one of several cases in which the distant parts might be affected through impression on the spinal cord.

Mr. BROWNE-MASON also gave an instance which had come under his own observation, in which a lady who, after undergoing a series of dental operations, was entirely relieved of severe rheumatic pains from which she had previously suffered.

Mr. CUNNINGHAM said the subject was of great interest to them as specialists. He thanked Dr. Hunt for his paper, and hoped he might have further opportunities of investigating this very complicated subject.

Mr. J. ROGERS BATE, L.D.S.I., of Tiverton, read a paper on the treatment of alveolar abscess. Nothing, he said, had yet been done to ensure success in all cases, but he explained a remedy he had used for some years, and with a fair amount of success. This was sulphide of calcium. He mentioned four cases in which he had adopted this mode of treatment, the teeth remaining inactive for considerable periods afterwards. He found sulphide of calcium most efficacious in the early periods, in fact when suppuration was threatened. He believed that too much faith was put in topical applications, ignoring in a great measure constitutional treatment, and he trusted other members would try the method he had suggested.

Brief complimentary observations on the paper were offered by Mr. Browne-Mason and Mr. Gaddes.

A paper on "Galvanic Anæsthesia" was read by Mr. W. V. Moore. He described the action of galvanism on the human system, and observed that notwithstanding the possession of such powerful properties, galvanism had not produced the marked result in medical treatment which might have been expected, comparative failure being no doubt attributable to error in the mode of application. Magnetic electricity had been used by many Dental surgeons for promoting local anæsthesia by the process of diversion of nervous power, but in the majority of cases giving one pain to subdue another. He proposed the use of a low power Faradic galvanic battery, the case having an arrangement to lift the plates out of the bath, and gradually lower them, thus regulating a continuous flow of galvanism under the power of the operator. He described the mode of application and said that not only for tooth extraction, but in some cases of neuralgia, the galvano medicated process could be applied with any chemical agent the Dentist may think best. While the magic wand

of electric science was now shown by its dynamic results, it was but natural that they should apply its power to Dental surgery.

Mr. KEYS asked Mr. Moore if he could use galvanism in cases where there were more than one tooth to extract at a time. Would he apply it to each tooth separately?

Mr. MOORE replied that he could take out three teeth with one application. The use of galvanism required great care, as in chloroform cases, and he should not use it for a restive patient.

Mr. CUNNINGHAM spoke of the painless extraction of teeth after rapid breathing, and advocated it as a local analgesia.

Mr. MOORE said he had tried this himself, and had found it to answer in some cases, but not in others; it was very much like mesmerism in this respect. He thought galvanism would eventually be used, along with other processes, and that pure galvanism would act as a sedative.

The PRESIDENT announced that he had received a letter, apologising for not being present, from Mr. Verrier, who was to have given a demonstration on the continuous gum process.

This concluded the proceedings.

In the evening the members of the branch attended a *conversazione* in the same building. The fine collection of oil and watercolour paintings of the Plymouth Art Club was thrown open for inspection, and a choice programme of vocal and instrumental music was performed.

CONGRESS OF THE GERMAN SURGICAL ASSOCIATION.

At the Twelfth Meeting of this Association, held in Berlin last April, a most interesting case of restoration of the lower jaw was shown by Von Bergmann and Sauer. The patient had met with a very extensive injury to the lower jaw and the neighbouring soft parts, by the bursting of a shell. Von Bergmann, by a series of cheiloplastic operations, succeeded in covering in the bone, and then handed him over to the Dentist Sauer, for the purpose of replacing by artificial means the missing portion of the jaw and teeth. The only fragment of bone which remained, was a part extending from the condyle to the wisdom tooth on the right side, and this was dragged down below the level of the tongue.

In his paper, Sauer says he determined to raise this fragment so as to get it beneath the upper teeth, and at the same

time to stretch the remaining soft tissues so as to obtain a space of similar size to that usually occupied by the lower jaw. For this purpose he constructed a small arch, moulded below on the remaining fragment of the jaw; this arch he then divided exactly in the middle line into two pieces which could be readapted. To one of these pieces he fixed a curved tube, in which a steel wire having the same curve and starting from the other piece, was made to slide. Both the tube and wire were held in position by vulcanising.

On separating the two portions as far as possible, an arch was obtained which corresponded in size to that of the upper jaw. Strong cramps, made of steel wire, kept the two halves of the artificial jaw widely separated and firmly fixed. The size of the arch in front and the height of the apparatus were then increased by the addition of layers of gutta percha.

As there were no teeth in the lower jaw to which the splint could be fastened, it was held in position by connecting it by means of springs with a plate fitted to the upper jaw.

In a short time the remaining portion of the lower maxilla on the right side was returned to its natural position beneath the wisdom tooth, and the full width of the arch of the lower jaw was successfully obtained. The only point of support on the left side was formed by the soft tissues of the cheek, but the result was, nevertheless, highly gratifying. The return of power in the muscles seemed to proceed *pari passu* with the stretching of the tissues, and in a very short time the patient could bring the lower jaw into contact with the upper one. A new piece, bearing teeth, was now made, and connected in a similar way by springs with the upper plate, and at the present time the patient is enabled to masticate a great deal better, in fact almost as well as before the accident. Breathing has improved very much since the use of the apparatus, and the power of speech is almost restored to the normal.

The importance, nay the absolute necessity, of the constant use of the apparatus was shown on the occasion when the splint was removed, for the purpose of fixing on the teeth. In less than 32 hours the soft tissues had contracted to such an extent, that it was almost impossible to get the apparatus back into position.

A DEMONSTRATION took place at Messrs. Cottrell and Co.'s depôt, 11, Rodney Street, Liverpool, on August 9th, which was numerously attended. Mr. J. S. Dicken, of Southport, exhibited his electric motor, and electric mouth-mirror, practically. Mr. A. B. Verrier, of Weymouth, illustrated the operation of his continuous gum furnace by firing and finish-

ing six cases in his usual excellent manner. Mr. Campbell showed his new mode vulcanizer and flask, also some ivory models of bar work, and of the cleft palate, as used by Dr. B. J. Buig, of Paris. Marsh's saliva ejector was also on view. Mr. Whitehouse's duplicating apparatus was explained. In the court-yard, which was covered over by an awning, Mr. F. Comer, of Torquay, proceeded to demonstrate the insertion of artificial teeth *without* a plate, where no roots remain, also the attachment of the Comer crown to a lateral tooth. Both operations were performed satisfactorily. Messrs. Cottrell & Co.'s display of Dental apparatus was exceedingly good and varied. They had also taken every precaution to render their visitors satisfied and comfortable even to the provision of general luncheon.

APPOINTMENTS.

Mr. ALVERSTONE GABELL, L.D.S.I., has been appointed Hon. Dental Surgeon to the Reigate and Red Hill Cottage Hospital.

Mr. GEO. J. LUCAS, L.D.S.Eng., has been appointed Hon. Dental Surgeon to the Gravesend and Milton Infirmary.

VACANCY.

DENTAL HOSPITAL, LEICESTER SQUARE.—Lecturer on Anatomy and Physiology to the above Institution. Applications on or before Oct. 7th, 1883, to the Dean, J. Francis Ken Underwood.

Correspondence.

[We do not hold ourselves responsible for the opinions expressed by our Correspondents.]

To the Editor of the "British Journal of Dental Science."

SIR,—On recently going over the specimens of Dental pathology in the Museum of the Royal College of Surgeons with my friend Mr. Eve, for the purpose of revising the catalogue, I was surprised and humiliated to find how imperfectly Dental surgery was there represented. Had it not been for the contributions of our great Hunter, the collection representing Dental pathology would be simply a disgrace to us.

The Museum of the Odontological Society has, no doubt, the first claim upon us; but still the Museum of the College

which first gave Dentists a recognized social standing has a great claim, and might be largely enriched without affecting the former.

May I, therefore, through the medium of your columns, beg that gentlemen having preparations on their premises, which are already well represented in the Museum of the O.S., will be so good as to deposit them in that of the R.C.S.

I shall be most happy to be the medium for receiving such, and will undertake to see that the names of the donors are duly recorded in the College catalogue.

I append a list of preparations which will be very acceptable, hoping for a favourable response from the profession.

Irregularities in teeth, 1 in size, 2 in form (united teeth, honey-combed teeth, syphilitic teeth, abnormalities in size and number of fangs, &c.), 3 in number (absence plurality), 4 in position. Casts typical of the above will be very acceptable.

Injuries to teeth (fractures, united fractures, dilaceration, dislocated teeth, split teeth, attrition of teeth).

Diseases of teeth (typical specimens of caries in various stages, hypertrophy of pulp, erosion of teeth, necrosis of teeth, exostosis of teeth, absorption of teeth—permanent, cysts in connection with teeth, roots removed from antra, odontoma, salivary, calculus large specimens, &c., &c.

I am, &c.,

ALFRED COLEMAN.

Holly Lodge, Streatham, S.W., Aug. 21st, 1883.

THE DENTAL HOSPITAL OF LONDON.

To the Editor of the "British Journal of Dental Science."

SIR,—An extraordinary meeting of the Committee of Management was held on Tuesday, Aug. 7th, for the purpose of taking into consideration a further munificent contribution from Sir Edwin Saunders of £1,200, in addition to a recent donation of the same amount, making the gift of Sir Edwin during the current year £2,400.

By this munificent act the hospital acquires possession of the wing on the east side free of cost. It is impossible to over estimate the value of this annexation, for in the words of Sir Edwin Saunders, "the necessity of additional accommodation became more and more urgently felt as the work of the hospital increased, until it culminated in a generally expressed desire on the part of the Medical Committee to acquire possession of the east wing, for the enlargement and more perfect adaptation of the building for the beneficent work for which the institution was established."

The amount of the contributions of Sir Edwin Saunders,

since the removal of the hospital to Leicester Square, exceed four thousands pounds.

The Committee, at their meeting on Aug. 7th, being unable to decide upon the best method of marking the munificence of Sir Edwin Saunders, appointed a sub-committee to consider it, and to report the result of their deliberations to the Managing Committee at their monthly meeting in October next. At the same meeting of the Committee, a testimonial was presented to Henry M. Phillips, Esq., whose zeal and liberality in giving most important professional advice on many occasions through a long series of years, is beyond all praise. For these valuable services Mr. Phillips has persistently refused to accept any remuneration; the legal expenses in association with the investigation of the title of the freehold property in Leicester Square, recently purchased, its conveyance, and the mortgage of £5,000 at 4 per cent. raised thereon, would alone have far exceeded two hundred pounds. To such a benefactor the Committee felt bound to make some material acknowledgment, as an expression of their gratitude and deep sense of his goodness and generosity. They resolved, therefore, to present Mr. Phillips with a testimonial, which consisted of a very beautiful chased and engraved silver salver and claret jug, each bearing the following inscription, "Presented to Henry M. Phillips, Esq., by the Committee of the Dental Hospital, in recognition of legal aid and advice generously given on many occasions, 1883."

Mr. Erichsen, the Chairman of the Committee of Management, presented the testimonial in an admirable speech of great ability, characterising the valuable services which Mr. Phillips has rendered to the institution and eulogising his great generosity in declining to accept any fee or reward for them.

Mr. Phillips acknowledged the compliment paid to him most gracefully and thanked the Committee very warmly for the testimonial, assuring them that his richest reward consisted in the hope that he had been able to render some service to an institution in the welfare, prosperity, and advancement of which he felt the deepest interest.

The meeting was very numerously attended, and all present appeared to consider the occasion a very enjoyable and gratifying one.

I am, &c.,

G. A. IBBETSON, *Hon. Sec.*

THE DENTAL HOSPITAL OF DUBLIN.

To the Editor of the "British Journal of Dental Science."

SIR,—I am sure all true friends of our profession must

feel that your correspondent, "Dental Reform," has done some service in eliciting from Mr. O'Duffy the important letter published over his name in your Journal of the 15th inst.

The disclosures made therein are, to my mind, of a disheartening character, and if brought before the public are calculated to discourage those who support deserving charities and good institutions.

Now, Sir, the object of this letter is not to exclaim of disclosures which must have pained Mr. O'Duffy to make, but rather to offer a suggestion, with the view to avoid unpleasantness, and conciliate and reconcile.

I see that there are not fewer than four eminent physicians and surgeons, Drs. Mapother, Duffey, Quinlan and Croly, attached to the Hospital. This being so, I would suggest the advisability of these gentlemen instituting and publishing a full inquiry into the working of the institution; feeling sure that some good may come of it, I am, &c.,

SIDNEY WORMALD, L.D.S., R.C.S.I.,

Member of the Representative Board British Dental Association, &c.

Stockport, Aug. 21st, 1883.

To the Editor of the "British Journal of Dental Science."

SIR,—May I, through your journal, ask some of those who have and are still using the "Campbell's New Mode Heater," to give some of their experiences in the working of it.

Mine is that when the thermometer registers 320 deg. the inner chamber does not nearly register that heat.

Seeing that such is the case, how are we to know when to press the celluloid?

I have tried it several times for vulcanizing, and after the heat has been maintained at 320 deg. for an hour, and even an hour and 15 minutes, the rubber has come out quite soft. Why is this?

In working the "New Mode" I have carefully followed the instructions given with the machine. Having been so unsuccessful, and knowing others equally so, I am at a loss to understand how so many Dentists seem to be so delighted with it.

I think there ought to be a thermometer connected with the inner chamber, and also a hole in the outer casing, that the gas may be seen. Is it a fact that celluloid worked in the "New Mode" will wear longer than if worked otherwise?

Yours, &c.

N. Z.

New Zealand, June, 1883.

To the Editor of the "British Journal of Dental Science."

SIR,—I trust you will find space for a few remarks on the

subject of filling by adhesive, and non-adhesive gold, in your journal. If one asks the advocate of adhesive gold filling the best way of saving teeth, he will answer, "By adhesive gold," and perhaps cite arguments in its favour. If on the contrary, you ask the supporter of non-adhesive gold, he will proclaim the manifold advantages of his favourite. Now, both methods have given good results. A perfect adhesive filling can be used with advantage in any case where gold can be used; but when it is advisable to restore contour, and in cases where the walls of the cavity are weak and cannot resist lateral pressure, non-adhesive gold will not give equally satisfactory results; but the plugging can be effected more speedily, which is of importance to the patient. Skilled manipulators, therefore, should use both, as the occasion arises. It has been said non-adhesive plugs are soft, but when we consider what is really requisite to the preservation of a tooth, viz., resistance to moisture, and to the force exercised in mastication, this forms no sound objection, as both results can be obtained by the exercise of ordinary skill and care. The Dental College should demand, from those looking for its degree, equal proficiency in the use of both forms of gold, as most practitioners, in after life, use that form of gold which they were accustomed to during their pupilage, to the disadvantage of their patients.

Yours, &c.,

HEAVY PLUGGER.

To Correspondents.

ANSWERS TO CORRESPONDENTS.

"Dens."—Article quite unsuitable for publication. Persons interested in such matters should seek good candidates, and where this is not done blame themselves for their own neglect.

"Bonâ Fide Dentist."—The Medical Council alone have jurisdiction in the matter. Why not apply personally to them to alter what you complain of?

Communications have been received from Messrs. W. Jamieson (London), Dental Manufacturing Company (London), J. Ritchie (London), T. P. Thompson (Belgium).

CORRECTION.—Errata.—Page 757, line 11, read Angioma for Angiona; and for W. H. Kiston, in next line, read W. H. Kirton, L.D.S.

BOOKS AND PAPERS RECEIVED.

"British Medical Journal," "Lancet," "Pharmaceutical Journal and Transactions," "Chemist and Druggist," "L'Odontologie," "Cape Times," "Southern Dental Journal," "Dental Cosmos," "Gazette de Hopitaux," "L'Art Dentaire," "Evenement," "Revue Odontologique," "Progrès Dentaire," "New England Journal of Dentistry," "American Journal of Dental Science," "Progreso Dental de la Habana," "Dental Luminary Odontologia."

British Journal of Dental Science.

No. 376. LONDON, SEPTEMBER 15, 1883. VOL. XXVI.

FLUXION DENTAIRE.

By Dr. MAGITOT, of Paris.

(Continued from p. 783.)

We do not oppose sufficiently an assertion which we find frequently made, even in classical works on the subject, that *fluxion* is to be attributed to dental caries, it is never a direct cause, it is a very grave error to say so, nevertheless there is a certain circumstance in which the changes exhibited in caries bring about a rapid *fluxion*.

We desire to speak of *caries pénétrantes*, which having destroyed the continuity of the cavity of the pulp and of the canals of the roots, cause, as a complication, an inflammatory condition of the periosteum with serous or purulent effusion. It follows then, as we will see, that the periostitis was a remote result of the caries; in this case the oozing being often insensible and quite sluggish. It is sufficient, then, to resort to plugging the cavity with a simple dressing, using slight compression, when an excretion appears, which according to the quantity of the fluid excreted, and whether it is serous or purulent, assumes the appearance of œdema, of simple congestion, or of the phlegmonous form. We may give the name of *fluxion by retention* to such cases. This form of obturation, when practised immediately, may prevent the formation of a true phlegmon of the face or of the deeper parts. Caries of this sort are precisely those for which we have proposed a special mode of obturation with the addition of a permanent drainage. (See "Bulletin de Thérapeutique," 1867.)

It follows from these considerations that *fluxion by retention* is invariably the result of a simple obstruction to the escape of the products of the inflammation. This remark is confirmed by what occurs when an opening is made, either spontaneously or by puncture, in a gingival abscess, for when the matter is allowed to escape no *fluxion* ensues. When one or many *fluxions* thus subside, a permanent or frequently occurring

fistula remains, a permanent or intermittent opening which results in effectually preventing the return of the *fluxion*. The character of periostitis, properly so called, being thus determined in the pathogeny of *fluxion*, we must point out the possible intervention of certain more complex or hybrid forms of this malady. We have thus osteo alveolo dental periostitis, which we must distinguish from periostitis, giving rise to gingival or facial *fluxions*, and by a similar process. (See "Archives Générales de Médecine," 1867). And again, let us cite certain organic changes of the peryosteum, fungosities, tumours, cysts. In the last case the *fluxion* ordinarily has acute periods corresponding to accidental congestions which frequently supervene in the course of these changes.

Having considered the many diverse lesions of the peryosteum which are considered frequent causes of *fluxion*, we will return again to the so-called accidents of dentition. One may easily see, already, what must be said concerning the first dentition; this is not the place to dwell upon it; but in the various phases of the evolution of the permanent, it is a frequent cause of this accident, principally during the eruption of the last molar or of the wisdom tooth. We all know distinctly that all the series of accidents due to the evolution of the wisdom tooth are invariably caused by the compression of which this tooth is at once the object and the cause, the space being so often insufficient which is reserved behind the inferior arc between the base of the ascending branch, and the posterior surface of the second molar. These accidents consist, in appearance, in a swelling of the mucous membrane, in inflammation, superficial or deep, and as a consequence of ulceration, and of gangrene of the broken down tissues. These are the phenomena which often isolated and local, are extended in some cases to the neighbouring regions, and the *fluxion* becomes œdematous, or phlegmonous in consequence. But it is another form of these accidents which is most frequently complicated with *fluxion*, it is when the wisdom tooth proves in its movement of ascension a material obstacle to its own alveolar cavity. The osseous tissue itself is then attacked by inflammation by the compression. This osteitis rarely remains localised, it is transformed soon into acute osteo-periostitis of the maxilla. The accidents are propagated in the interior of the alveolus following the spongy centre of the bone in the horizontal ramus or in the vertical ramus, and sometimes in the two simultaneously, having for their centre of production the region of the angle of the jaw. *Fluxion* is then inevitable, and it is thus that the muscular sheaths of the masseter and sometimes of the pterygoid are quickly involved.

(To be continued.)

A REVIEW OF THE SCIENTIFIC PROGRESS OF DENTAL SURGERY FROM 1771 TO 1883.

By C. SPENCE BATE, F.R.S.

PRESIDENT OF THE BRITISH DENTAL ASSOCIATION; VICE-PRESIDENT OF
THE INTERNATIONAL MEDICAL ASSOCIATION, DENTAL SECTION.

(Continued from p. 794.)

If we examine a fœtus at the period of three months gestation we find that the pulps and sacs of the teeth are too large to fill the arch of the jaws, and at birth the teeth occupy positions in relation to each other which are exceedingly irregular. The laterals in the upper jaw are placed diagonally, and behind the central incisors, whilst the canines are turned almost at right angles with the rest, and thrust out so as to form a prominent bulge on the facial wall, whereas the molars which lie in a line of regularity, have their anterior portion raised and the posterior depressed, both in the first and second, so that the latter appears to ride the former. Thus we see at birth the jaws are not sufficiently developed to the extent required to receive the teeth in their normal arch, and as in the human mouth the premaxillary bones unite a short time after birth and become firmly a part of the upper maxillary, it follows that the only development that takes place can be at the posterior extremity of either jaw. That which is true of the premaxillary bones of the upper jaw is also true of the symphysis in the lower. Any retardation in developmental growth that may occur, must result in a contraction of the space required for well developed teeth in their position. This is evidently the inducing cause of the large amount of the irregularity in the position of the teeth in the mouth of the young modern civilised individual. Hereditary cases of extreme degree are visible in families where more or less close intermarriages have frequently occurred. It has been observed that the palatal arch has deepened, and the dental arch contracted and narrowed so as to lose much of the character of the normal arrangement. This in some instances is carried to such a degree that the removal of many teeth is absolutely necessary to produce anything like a natural arrangement of the teeth, and in one instance a friend of extensive experience told me, that he, in one young patient in whose family this contraction was very apparent, removed every alternate tooth out of each jaw, with the consequent result that when his patient grew to womanhood she was the only member of her family that was not compelled to resort to artificial substitutes.

Another feature that is evidently the result of a retardation in the growth of the maxillaries is shown in the tendency of

certain teeth to disappear. In the lower vertebrate forms as the marsupials we have four molars on each side of each jaw, while in the higher there are only three, and in man we find that this number is very commonly reduced to two. In the lower forms of vertebrata we find the normal number of premolars is four, in the higher it is three, in the quadrumana it is only two, except in the new world marmosets, where there are three premolars succeeding their deciduous molars. In man there are but two. The normal number of incisors or premaxillary teeth is eight in each jaw. In the carnivorous vertebrates it is only six. In monkeys and man it is reduced to four, but in civilised man two of these are frequently absent from the upper jaw. The original number of teeth in the vertebrate life was fifty-two, but this has been reduced to thirty-two in man and the whole world quadrumana; and there is evidence to show that the standard number of teeth in the human mouth is gradually lessening to twenty-eight. That the change is not of accidental disarrangement, but one of an approaching permanent condition is seen in the frequent recurrence of the old and obsolete organs appearing in the position of the lost. There are instances, one of which I have seen myself, of four well developed molars in the upper jaw, and Professor Owen states having seen in the collection of Bason van der Capilla, near Utrecht, an adult *simia satyrus* which also had a fourth molar, and it not unfrequently happens that an abortive effort of the gemmination of a fourth molar is seen in the presence of an odontome of varying size, attached to the posterior wall of the last molar, as if nature yet struggled but lacked the power to resume its old condition. More frequently, however, we see the effort exhibited in the formation of a rudimentary tooth of the cetacean type assuming the place of the lost organ. This is not infrequent in position where the third molar and the lost premolars should have been, and also between the central incisors to show us from whence the teeth have disappeared from the premaxillary bones. The form these organs, that are generally recognized as supernumerary teeth, assume, is that of the simplest implanted tooth, being conical at both ends, one being tipped with enamel. Thus it appears by a law of atavism, that the rudimentary effort results in the earliest and simplest form of the organ.

This is not all the changes that observation teaches us to expect in the mouth of the man of the future. Particularly in the teeth of young and healthy individuals. The molar teeth more especially in the upper jaw exhibit a tendency to enlarge themselves, particularly in their diameter. This is apparent most conspicuously in the development of a cusp

prominent on the inner or lingual surface on the first and second upper molars.

No doubt but that the peculiarity has been observed by most of us, but its true significance was not appreciated by myself until pointed out by Mr. F. Balkwill, as a recent divergence from the normal form that is of too frequent a recurrence and a feature too important to be without its significant influence in the character of the tooth in the future.

(To be continued.)

DISCUSSION ON THE THEORY OF CARIES.

(Continued from p. 799.)

MR. CHARTERS WHITE: The subject under discussion tonight is one of great interest to us all, because it constitutes, as it were, the basis of most of our Dental practice. We all know that if there were no decayed teeth there would be no stopping, and if there were no decayed teeth there would be no supplying of artificial teeth, and it is therefore the principal disease which we are called upon to treat. But really I do not think I can add anything to the opinions that have been expressed so ably by the gentlemen who have preceded me. I have a strong feeling myself that caries is mainly due to chemical action, for various reasons. You generally find that Dental caries manifests itself in those parts of the mouth where a lodgment of any kind can be found—as, for instance, in the case of those interstitial cavities which come before us so often, and in pits and fissures on the grinding surfaces of the molars. You very seldom find a decay originating in the front of an upper central tooth. You never find it occupying the polished surface, but you nearly always find it by the side of the teeth. You will find often that it originates between teeth very close together, which have been exercising a mutual pressure and crushing each other down. Again, I have a patient who had magnificent teeth, an entire set, but they were very close to each other, and after an attack of rheumatic fever there were interstitial cavities between all the teeth, the result of mutual pressure and acid medicine. Then another thing leads me to conclude that chemical action has a large share in the production of Dental caries, and that is, if we have a patient who has not very cleanly habits, and who wears an artificial denture from one year's end to another without taking it out—if you take that plate out of the mouth you will find that the pattern of the plate is mapped out with superficial caries and decalcification of the teeth all round. Caries is therefore often set down to the wearing of these

artificial teeth, whereas it is in consequence of the chemical action set up. I am always very careful to impress upon patients the necessity of keeping the insides of their gold plates perfectly clean and polished, and then no disease will arise, because I feel it is entirely from that cause. I thought it might be interesting to the members if I put a few photographs in my pocket which have been taken from microscopical sections, and which will show the liability of those teeth where there are fissures existing to Dental caries, above those which are more soundly built. You will see in this photograph, Mr. President, a longitudinal section through the top of a decayed tooth, with a fissure almost through the enamel. That would form a lodgment for food, and acidification would take place, and extend the decay. Already you will find that in the dentinal tubuli there is a consolidation taking place, and the transparency is shown by the light passing through. In the other specimen there is an abnormal fissure at the top of the tooth, and the irritation has been so great that numbers of the dentinal tubuli have been filled up, and a mass of secondary dentine formed in the adjoining pulp cavity. Then, again, if you examine the other photograph, showing globular dentine, you can readily imagine that if once acid should gain access to the interstices between these globules, rapid decay would set up; but I have often noticed in these cases that the ridges and pits have been filled up by tartar, and I suppose in that way the acid has been checked, or else there would be more wholesale destruction than we usually find. All these things point to the chemical origin of caries. I do not say that the vital causes are excluded altogether, because I think that vital action bears a large share in the Dental economy. As has been pointed out by Mr. Hutchinson, you will often find that in the commencement of caries there is a consolidated zone of the dentinal tubuli, which is a little way in advance of the caries, and that evidently must be due to some vital action. These tubuli are consolidated with a view of blocking out the disease—erecting a barrier to prevent further irritation to the nerve. Then, again, we know that if there is an evasion of caries approaching the pulp cavity, we often find a nodule of dentine formed inside the pulp cavity, which acts, to a very large extent as a patch to keep out the invading enemy. That shows that vital action has a large share, not indeed in the production of caries, but in attempting to oppose its progress. Then, again, vital action may be often seen in the symmetrical arrangement of decay. I have one patient now in my mind where the central incisors at the front on each side are marked by symmetrical spots, something similar

to those white spots you get on your nail. There was evidently some symmetrical action going on there during the development of the tooth, and if this symmetrical action can take place in the formation of the tooth, why should it not equally take place in its destruction? Therefore, while I hold that chemical action is to a large extent answerable for the production of Dental caries, I think we must at the same time exclude vital action from having some share in it as well; but these are things which remain to be further worked out.

(To be continued.)

BENEVOLENT FUND.—REPORT AND DISCUSSION.*

THE report of the Secretary was in effect, that the result of the appeal to the members of the Association had been promises of an amount of donations that, capitalised and added to the promised Annual Subscriptions, would yield £90 per annum. This had been promised, however, by only one-fifth of the members, and he thought it not very encouraging; it was for the meeting, however, to determine whether the scheme should be persevered with and the Fund inaugurated or not.

In drawing up the rules, those of other charities had been consulted, and the Representative Board desired that members of the profession outside the Association should, as far as possible, be admitted to its benefits.

THE PRESIDENT invited discussion on the question whether or not it was desirable to establish a Benevolent Fund.

MR. C. SIMS (Birmingham): The report states that only a very small number of members—only about one-fifth—seem to have taken a really active part in working with the committee and promising subscriptions. But I wish to point out that many members I have spoken to object to pay money to any new society until they see what the working of the system will be. This Benevolent Fund, as I take it, is intended for what we may call the respectable members of the whole Dental profession. Now, in the starting of all similar societies we generally find a small amount of funds in hand at the commencement. If we look back to many of the large societies—notably to the British Medical Society—and I take it we are following in their footsteps—we find that the number of

* Meeting of the British Dental Association, held at Plymouth, Aug. 24th, 1883

members was remarkably small at the beginning; in fact, the same complaint was made at that time that we make at the present. I am not at all certain but that this is the proper commencement. If this Benevolent Fund is on a right foundation; if rules are drawn up so that it shall be for the benefit of the whole profession, as we intend it, I fully believe that when the thing is once started, the members of the profession will take it up, and help us in every possible way. We ought not to wonder why many members do not take a more active part in this matter. The Association, by many outside people, is looked upon as not having performed all it promised. Many of the members whom I know—some, at all events, of 21 gentlemen who have resigned—say that we have not done all that we intended to do, and one point is the formation of a Benevolent Fund. Therefore we should not be downhearted at the small amount promised in the way of annual subscriptions. It is a fair start, and we hope that in a few years the amount will greatly increase. I certainly think that as the Association started with this Benevolent Fund as one of the objects in view, it would be a lasting disgrace if, having proceeded so far with it, we did not carry it through. I hope the meeting will pass the measure. The rules have been drawn very carefully, a large amount of time and trouble having been taken to bring them into thorough working order; and I trust that in a few years' time we may be able to congratulate ourselves on the Fund having been this day inaugurated.

MR. DENNANT: I hope I may be excused for rising so soon after having read the report of the Committee——

THE PRESIDENT: Do you second?

MR. DENNANT: I do not take it that the previous speaker has actually made any proposition. I was anxious to say that I agree with a great deal that is before us; and if we can localise the discussion it would be a great advantage. If before many members rise I put my own private views before the meeting it may assist the discussion. I beg to state very distinctly that I am not now speaking as chairman of the Sub-Committee. The time at our disposal as a Sub-Committee to-day has been so extremely limited, and the time of the Report Committee has been taken up with the consideration of so many questions that we have not been able to decide this question, and it has been thought better that it should be decided by the present meeting on its merits. Twelve months ago, I may say, my ardour in this matter had a good deal cooled down. I had been brought into contact with a good many gentlemen of the profession, and after an interchange of opinions with them, I was led to believe that

there was rather a lack of enthusiasm which was necessary to carry out a scheme of this kind to a successful issue. Thus many of us felt that the time was inopportune. The country was passing through a period of serious financial depression. We were all of us feeling it in our small way, and for that and other reasons I felt it would be better had the promotion of the fund been delayed two or three years, awaiting further education of opinion in the profession, and better times. However, I was persuaded by one or two respected friends to take up the matter again with other members of the Committee. In fact we were stirred into action very much by Mr. Crapper and other gentlemen, who evidently supposed that we were going to sleep and neglecting our duty. The result is the report that I have submitted to-day. Well, my opinion to-day is changed because the circumstances are totally different. It is true we have had a very small response to our appeal; but then, with our knowledge of human nature, we must be fully assured that many good schemes are carried out from small beginnings; in fact it is the few strong minds who are always ready to initiate any new movement that has for its object the amelioration of mankind. We look not to the many, but to the few; and if a few good men will inaugurate a scheme, we believe man is such a gregarious creature that the multitude is sure to follow. We have not appealed to the profession generally. I wish distinctly to lay that before you. We have appealed simply to the sympathy of the members of our Association; the profession at large, as I say, know nothing of our scheme; but I am hoping that when the whole thing is put before them, many outside the Association will not only approve of it, but support it, and probably be induced also to join an association which has beneficent aims as well as those which are of a political, scientific and social character. There are certainly one or two possible reasons which should be the only ones that ought to be allowed to prevent our starting this fund. The strongest one, to my mind, would be the utter breakdown of the Association, the impending collapse of the whole thing. Well, I ask to-day, does this meeting look as if the Association were going to pieces? Your presence fully assures us that it will not. Those of us who have had something to do with the worry and the anxiety of the management—I do not mean to take to myself any high honour in that way—I am thinking more particularly of our friends the Treasurer and Secretary, for the worry and the anxiety have rested very much on their shoulders, are apt very naturally to take a pessimistic view of the whole thing. Here we have had the Treasurer's report speaking of arrears in an Associa-

tion of 400 members, of something like £200. Now that is a disgrace to our Association ; it cannot be considered as any other than a very great disgrace. Then, again, I must ask you to bring your experience of mankind to bear when you think of it. The Association was started in exciting times ; many were induced to join it hardly knowing what they were joining ; a great many of these members are living in various parts of the country, outside the range of its operations to a certain extent, and when it comes to the punctual payment of guineas as the fulfilment of duty, we know that many men fall short. But I am not discouraged by that. Granting that many of those men may fail us and retire, or will have to be kicked out for lack of doing their duty, we have had evidence to-day that others will join ; and I believe that as the Association works in the direction of multiplying its branches, and as the influence of those branches in their respective neighbourhoods increases, so it will become strengthened, like that oak which casts out its roots and fibres in all directions, until it becomes thoroughly established as one of the professional associations of the country. Therefore, I am not inclined to take a pessimistic view of the matter. Although our finances do not look encouraging, we are face to face with another condition of things. We have a definite sum of money promised by, it is true, only 80 or 81 members of the Association ; but analyse that list, and in it you will find the names of our most respected President of the Representative Board, Mr. John Tomes, Sir E. Saunders, Mr. A. Woodhouse, and I could mention no end of names of gentlemen who are recognised leaders of the profession. With such men initiating the scheme, I think we have every reason to believe that the profession will support them. The question for us to decide to-day is this, shall we, by our vote, intercept this small stream of charity from reaching any cases of distress that may arise ? I trust you will see it would be unwise and the reverse of benevolent to do so. Of course this is to be a charitable fund, not a provident fund. We hope that the day may be far distant when any of us who are endeavouring to inaugurate the charity would become needful recipients of it ; but, gentlemen, we know not how sudden and how swift the arrow may fly that may lay any of us low. Careful as we may be to provide for our friends, we don't know how soon the action of the Benevolent Fund may be a means of benefit to us. I therefore hope your judgment will support me in the effort to establish the fund to-day. I beg to propose, "That in view of the fact that between £80 and £90 a year will become available for the purposes of charity to the profession and to

the members of the Association, the Benevolent Fund be at once inaugurated." I should remark that the fund being so small it would necessarily be our duty to nurse it up for two or three years. We shall have professional sympathy with us, and in the course of ten years, we shall have accumulated a fund of sufficient amount to be a credit to the profession, and a substantial help to those whom it is sought to benefit.

Mr. OAKLEY COLES (London) : I rise to second the resolution. I am not at present enthusiastically in favour of the fund, because I think we have scarcely got such a return as we ought to have expected, though, curiously enough, it is borne out by the slow average result of appeals for charitable purposes. The responses to charitable appeals average 20 per cent., and in this case our result comes precisely to that amount. So that in that respect we have reached the full average of the condition of things that occurs in all charitable enterprises. So far, therefore, we must be perfectly satisfied ; and if this appeal were extended to all the 4,000 on the register we might hope to have 800 returns instead of 80, which would make a material difference in the amount of money available for the Fund. The Benevolent Fund, it must be remembered, is part of the original scheme of the Association ; a large number of the members were anxious we should try it, and even if there is any doubt about it we should try it rather than divide against it.

The SECRETARY : I should like to make a few remarks on this very important question as one who has taken an active part in endeavouring to ascertain the operation of the Association, and in helping our chairman to formulate the suggested bye-laws, and in other ways working out the matter according to the will of the Association, and of the Representative Board. I may say, to begin with, that I have all along laid aside any personal opinion in the matter. But when personal opinions come to the front, and every man is supposed to give his opinion freely, there is no reason why I should be silent. I say for one, that I think, whatever the future may do for us, according to the evidence we have before us, the present is not the time for the establishment of this Benevolent Fund. I find that there is a great deal of loose talk on this matter. People talk of men they have spoken to, and of what this or that person says. Now I don't listen to talk. I judge people by what they do ; and its the only way you can judge with reference to this Benevolent Fund, which is entirely a matter of £ s. d. I have not heard many people talk, but I have seen the writing of a great many. I have sent out circulars to every member of this Association.

have sent out 500 circulars, and only 80 have replied. When we are told by our Chairman that we must not intercept the Benevolent Fund by our vote, I say that we are not doing so; we who have responded to the appeal do not intercept it, it is those who have not responded, and only those who have not responded are responsible for the failure of the fund if it fail. Further, I don't think that 80 members of the Association have the right to impose their will, however beneficent and benevolent it may be upon the remaining 420. Another bit of loose talk has come to my notice from my friend Mr. Oakley Coles, who is rather sharp on me sometimes, and as it is a matter of figures, I am rather surprised to hear it. He says that according to statistics the average number of responses to charitable appeals is 20 per cent., and we have had the full average. Now I for one can't see how 80 is 20 per cent. of 500. That, you see, is another specimen of the way in which these matters are discussed. Another reference was made to the British Medical Association, and to the number of the members of that Association. Now I don't see how that bears. The number of members was not a consideration; and, besides, the Medical Association has no Benevolent Fund. It is not a question of the number in our Association or in the profession, but of the number of persons who are willing to subscribe to the fund. We have had attention called to the list of members who have responded, and another loose expression has been made use of—"There's no end of names," it is said. But it's useless to stand up and talk of "no end of names," as though they were ready to flow in or had flown in with anything like spontaneity. I say they have not. I say that the response has been of a very parsimonious and meagre character; and I doubt the propriety of the 80 or 81 members who have promised to give donations and subscriptions, going on until we are better supported. I don't think the work that has been done will be lost. These suggested bye-laws are very excellent, and they will remain as a mark of our intentions. The promised list of subscriptions will exist as another mark of our good intentions. The work will not be left, for you will always find some one ready to agitate in behalf of it. But it may be lost if we begin the Fund on so small a sum as £80. What can be done with so small a Fund? We shall always have demands. I have had four or five applications already under the impression that we had a Benevolent Fund in existence; and if that is the case before it is established, what will it be afterwards? We shall be holding out hopes that can't be realized, unless we make a better start. I do not abate my desire to have this Benevolent Fund one iota; I admit, indeed, I believe in its desirability

and necessity, but I don't believe in the response to the appeal we have made to the profession. And people are not all quite consistent. There was one gentleman who was very ready to egg us on to the establishing of this Fund, and at the last moment the gentleman sent in his promised donation to me, but he entirely ignored the fact that his subscription was required also. And now, what is a single donation to a Benevolent Fund if you don't follow it up with a subscription? And that is the difficulty those who have to manage the Fund will have to contend with. We can't get in even the subscriptions of members of the Association. Whether it be forgetfulness or whatever it be, it doesn't lessen the difficulty to the Executive, neither does it lessen the importance of the money to the Association. Our funds, as the report shows, are in a precarious condition if we have any extended litigation to encounter; and it is a matter much more likely to happen than some of us imagine. If we can't be just before we are generous, it's a bad look-out for the Association and for the Benevolent Fund also. I reiterate what I have said. I don't say that I think the time has not arrived for a Benevolent Fund—all time is the time for charity, but I don't think the response we have received from the members of the Association justifies us in carrying it out. It is 81 men imposing their will on 420.

Mr. RENSCHAW (Rochdale): The Secretary has told us that the 81 who responded have no right to impose the weight of the Benevolent Fund on the Association. If you will allow me, I will state a parallel case. Some 51 years ago my father was a poor apprentice boy. He was an orphan, and his uncle to whom he was apprenticed allowed him a penny a week. My father and four or five other young fellows determined to visit the sick and afflicted poor of the town in which they resided. The result of that was that in the course of time a charitable institution was formed for the relief of the sick and afflicted poor in that town. One would hardly have supposed that a good society could be formed by half-a-dozen lads, most of them with an income of a penny or twopence and, at the outside, sixpence a week. But what is the result? Two or three months ago we had our annual meeting; I may say that I am intimately connected with the Association now; and at that meeting it was reported that the Association had lived for 51 years, and during the year then ended, its visitors had paid 1500 visits with relief. That, I think, was a good result from a "day of small things." If a Society, begun as that was, has lived 51 years, and done such an incalculable amount of good to suffering humanity, surely it is not impossible for a Society with 400 members,

81 of whom have responded—and responded generously; I must admit I am one of those who have not responded. I have been waiting.

The SECRETARY: That is what you all do. You all wait.

Mr. RENSHAW: I shall be very happy to give a donation and a subscription, and I trust that the 81 members who have responded will carry the day in this respect.

Dr. WAITE (Liverpool): There are three or four reasons why we should support and carry the resolutions proposed. First of all, the Association was called into existence upon the understanding, amongst other things, that a Benevolent Fund should be established. We are therefore committed to the establishment of a Benevolent Fund as soon as we can see our way clear to doing it. Another reason is that the Association would hardly fulfil the general objects of such an Association unless it had some provision for the sick and the distressed among its members. Another reason is that the very fact of a Fund existing, large or small, would offer additional inducement to members of the profession to join the Association. Another reason seems to be that we have already gone so far. We have had the machinery, to a certain extent, constructed and got into working order; and we have promises something like £80 a-year. Concerning this, our esteemed Secretary seems to have a very poor opinion. Eighty pounds a year, what would it do? It would at least furnish substantial relief to four cases—£20 a year would be a considerable help; and if we could only give that, I am persuaded that as soon as we have begun to do some practical work of benevolence, the influence of the Fund and of the Association will be widely extended. Men would begin to see that there was something to be gained, large or small, by belonging to the Association, and that the Association was really doing some practical good in the profession. I think we are pretty nearly unanimous, and I hope the Chairman will now put the question to the vote.

Dr. CUNNINGHAM (Cambridge): I rise to frankly confess that I am not one of the 81. I felt that I owe the first duty to myself, and I am not in a position to give either a donation or a subscription. I don't mean to say that in time I may not; but the reason I have not done so is this—that the profession generally ought to distinctly express its desire for the creation of such a Benevolent Fund; and in my humble opinion, from what I have heard to-day, there is no such general desire. It is possible, of course, that I am wrong. At the same time I think the Association may do one thing, and that is to call forth a greater amount of energy and co-operation among the Dentists of the Kingdom. We have only 400

out of so large a number of names on the register, and out of this 400 there are not 300 really practical members of the Association. Consequently, the profession have not done their duty as a whole, whatever we may have done as individuals in setting a good example. An appeal has been made to our sentiment in an eloquent manner and in a way that naturally makes every one of us who is in doubt think he is wrong. But an appeal has been made on the other side by our Secretary, and there can be no doubt as to his motive being pure and disinterested, as much from his own standpoint as with the view of promoting the success of the Society and the glorification of the profession. He has made an appeal to our common sense, and I think it entirely a matter of sentiment *versus* common sense. It is quite possible that when this discussion is laid before the profession, as it will be through the periodicals, and when the fact is shown that a Committee has been appointed and that a great deal of thought and time has been given to the elaboration of a scheme, more general support will be given to it. It will be seen that the reason we have hesitated to carry the scheme into immediate execution is that we think by keeping it back a little time we may call forth a greater and prompter response from members of the Association and from the profession as a whole. From this point of view I would desire to second the resolution of our Secretary.

The PRESIDENT: He has not moved a resolution. You are speaking now against the motion.

Dr. CUNNINGHAM: If a resolution for the rejection of the report is proposed by our Secretary I shall be happy to second it. The discussion must bear fruit, and next year we may be able to start on a much better basis. I have heard this Fund talked of as a fund for the creation of Dental paupers, but I hope that such a thing is very far off.

Mr. BRUNTON (Leeds): If this Fund is allowed to drop the members of the Association who have given their promises will think themselves released from the obligation to support it. I hope it will not be allowed to drop, and that those members who have already subscribed, or promised subscriptions, will (however small their subscriptions may be) contribute something to the Fund, and by that means water the acorn, and by-and-bye we shall see a leaflet springing up, and perhaps, in the course of time, a few acorns growing.

Mr. LEVESON (Hereford): There is an old saying, and in this case we ought to take it to heart, that charity begins at home. I think it is rather hard lines for those of our profession, and those in any way connected with the profession, that they should have to appeal for charity to outsiders,

because they have no means of obtaining assistance from the profession. It will be in the recollection of a good many that some few months ago there was an appeal made for a poor widow who had been left with a number of children, and there was a good deal of difficulty in raising sufficient money to meet her case. Of course, at the present time the Benevolent Fund would not enable us to give so much as was required for this poor lady and her children; but there would be no objection, I presume, on the part of the profession generally, to supplement the grant if necessary until we have sufficient to give proper capital to enable a widow in such a case to start in some small way of business to support herself and family. A good many remarks have been made, and I would not unnecessarily go over the same ground again; but there are one or two points I wish to make. I think that as a body we are committed to this Fund, the Association was formed with that view, and we ought not to forget it. A gentleman spoke of our having had a small beginning. I have no doubt that when once the Fund is actually formed, many men, who have been holding back to see what would be done, will join and help us generally.

Mr. KING (Shrewsbury): I have no doubt that, after the castigation administered by the Secretary, the amount of the Fund at the close of this meeting will be very much larger than when it commenced. His words were severe, but none the less merited, and they are likely to produce very good fruit. I notice a spontaneous movement in this quarter, which I believe will have a very good result; at any rate, it will bring up the percentage very considerably.

Mr. WEST (London): We have listened to a good deal of sentiment, and sentiment with which we all agree. We all agree with what has fallen from Mr. Dennant and Mr. Brunton, but I should like to suggest one practical idea, which I think deals with the main cause why there has not been a greater response to the appeal, and that is that there has been no definite sum named. Had there been any definite sum named as a subscription, I think that nearly every member, at least the majority of members, would have felt inclined to entertain it. But when the amount is left open, you may have two gentlemen in a town, and Mr. A. will be able to put down a ten guinea donation and a two guinea subscription; but Mr. B. cannot afford nearly as much, and as he doesn't like to be published in a lower list he declines altogether. If gentlemen who have ample means and equal generosity, were allowed to give a donation as large as they please, and a definite annual subscription were named, there would be no difficulty whatever.

Mr. CAMPBELL (Dundee): I tell you what we did in our Scottish Branch. When the subject is under discussion, we agreed to make an effort at least to offer a five guinea donation and an annual subscription of one guinea; that was the understanding, and I think it was carried out very heartily.

Dr. ROLSTON: If I may be allowed to make a remark as a member of the medical profession belonging to a Medical Benevolent Society which was started twenty years or more ago in this county, I may say it strikes me that your proceedings to-day are rather encouraging, because we, having existed more than twenty years, have only some sixty subscribing members out of 400 in the county. Although we are continually making appeals, and individuals are constantly seeing the benefit arising from the society, yet we find a difficulty in getting any members outside the large towns to join us.

The SECRETARY wished it to be distinctly understood that what he said as the result of official experience did not in any way affect him in his relationship to the Benevolent Fund. His views were very clear; at the same time he had worked loyally with the Committee. He did not wish to move a resolution, and should content himself with voting against the resolution of Mr. Dennant.

Mr. C. SIMS, of Birmingham, handed in to the Secretary a list of new subscribers.

The SECRETARY remarked that he would rather gentlemen sent in the form which he had supplied them with, or a similar paper. It often happened that unless there was an official form to refer to, gentlemen who sent in their names in an informal way forgot it, and were under the impression that they had given no promise.

Mr. SIMS said if the Secretary would supply him with the necessary papers, he would take care they were sent to these gentlemen.

Mr. DENNANT said no doubt there were many gentlemen in the room who would like to state what they were willing to do, and he offered to write out a form of promise on foolscap for them to sign; he was sure that would satisfy the Secretary.

Mr. ROFF KING (Shrewsbury): This is too much. Does Mr. Turner-Smith think that any man would put his name down and then refuse to pay?

The SECRETARY said he was simply speaking from official experience. He had had that difficulty to encounter again and again.

Mr. SIMS: These gentlemen are willing to subscribe, I can answer for them.

The SECRETARY then read the following list of promises:

	Donations.			Annual Subscriptions.		
J. Renshaw . . .	£5	5	0	£1	1	0
F. Ewbank . . .	5	5	0	1	1	0
Roff King . . .	2	2	0	1	1	0
Mr. Morrison . .				1	1	0
A. Petrowsky . .	5	5	0	1	1	0
Caleb Williams . .	2	2	0	1	1	0
Graham White . .				1	1	0
E. H. Williams . .				1	1	0
Jas. Browne . . .	2	2	0	1	1	0
A. Baines . . .	5	5	0	1	1	0
J. Holland . . .	5	5	0	1	1	0

Another list was afterwards handed up to the Secretary, as follows:

	Donations.			Annual Subscriptions.		
H. Mellett . . .	£	—		£1	1	0
R. F. W. King . .	5	5	0	1	1	0
J. Fenn Cole . . .	5	5	0	1	1	0
A. Geo. Hockley . .	5	5	0	1	1	0
F. J. Vanderpant .	5	5	0	1	1	0
T. F. Cooke-Parson.	25	0	0	2	2	0
H. W. Meyne . . .				1	1	0

Mr. HOCKLEY said that as one of the 319 who had been so condemned by Mr. Smith-Turner, he must protest against that gentleman's remarks. Printed notices meant very little, and were generally put on one side, not with any intention of neglecting them altogether, but with the idea of attending to them at some future time. There was no unwillingness to subscribe if some one would take the trouble to canvass, he was sure they would get lots of subscriptions.

The TREASURER said Mr. Hockley and others seemed to be indifferent to the cost of circulars. On the last occasion on which a circular was sent out he was called on to pay £2 for postage; therefore it was not a mere bagatelle. Printed circulars ought to be attended to, certainly, but they were not.

After a few remarks from Mr. BAINES,

The SECRETARY said he was glad he had been the means of stirring up discussion and bringing members to a sense of their responsibility. Remarks had been made as to what would have happened if only so-and-so had been done. Officials could only give a certain amount of time and labour to the work; and it was as much the duty of members as of officials to exert themselves. It was a matter of individual responsibility. He did not think it would be advisable to adopt Mr. West's suggestion to limit the amount of subscriptions. The Committee had done its best, and the Re-

representative Board had sanctioned all that it had done, and that was all the answer he could give to any "ifs" as to what would have happened had things been done in a different way.

The resolution proposed by Mr. Dennant was then put to the vote and carried *nem. con.*

On the motion of Mr. J. T. BROWNE-MASON, seconded by Dr. WAITE, the bye-laws of the Benevolent Fund were adopted *en bloc*; and on the motion of Mr. DENNANT, the committee were requested to undertake the election of officers for the management of the Benevolent Fund.

Mr. RENSHAW moved and Mr. BRUNTON seconded a vote recording the high appreciation of the services of the President and Members of the Representative Board, which was carried by acclamation, and briefly responded to by Mr. DENNANT.

RULES OF THE BENEVOLENT FUND OF THE BRITISH DENTAL ASSOCIATION.

Name.

I.—The Institution shall be called the Benevolent Fund of the British Dental Association.

Object.

II.—The object of the Benevolent Fund is to afford, privately, pecuniary relief when practicable, first, to necessitous and deserving members of the British Dental Association, being contributors to the Fund, their widows and orphans; and secondly, to such necessitous persons as are or have been Dentists, and have not been members of the British Dental Association or contributors to the Benevolent Fund, but who, in the opinion of the Committee of Management, may be deserving objects of relief; and to the widows and orphans of Dentists who were not members of the British Dental Association, or contributors to the Fund at the time of their decease.

Capital and Income.

III.—The Fund shall be supported by annual subscriptions, donations, and bequests.

IV.—All legacies and bequests shall be considered as capital, and shall be invested in the names of three Trustees of the Benevolent Fund of the British Dental Association in Government Securities, Bank of England Stock, or Trustees' Securities, and no part of such fund shall be withdrawn from capital, except by a resolution author-

ising such withdrawal passed at a General Meeting of the contributors convened for the purpose and confirmed at a Special General Meeting of the contributors to be held not more than two months or less than one month after the first-named meeting.

V.—All annual subscriptions, donations of less than £5, and all dividends and interest arising from capital, shall be considered as income, and shall be applicable to the payments of grants and the assistance of applicants, and to the payment of necessary charges and expenses.

VI.—Donations of £5 and upwards, unless otherwise directed by the donors, shall be added to capital, and any surplus above £10 may, at the discretion of the Committee of Management, be added to capital.

Privileges of Contributors.

VII.—The following contributors to the Fund shall be entitled to vote at all General and Extraordinary General Meetings, viz.:—annual subscribers of £1 ls. and upwards, and donors of £10 10s. and upwards in one payment, or £5 5s. in two consecutive years.

VIII.—Votes on all questions, excepting the election of the Committee of Management, must be recorded personally; but for such election they may be recorded by delivery to the scrutineers, either personally or through the Chairman, of a list issued by the Committee under Rule XI., after

erasure or substitution, by the voter, of the names thereon, in accordance with Rule XII.

IX.—Annual subscriptions shall be payable in advance on the 1st of January or 1st July in each year, at the option of the respective contributors, and no contributor whose subscription is *two years* in arrears shall be entitled to any privileges as to voting or otherwise.

COMMITTEE OF MANAGEMENT.

Constitution.

X.—The affairs of the Fund shall be conducted by a Committee of Management, consisting of seven contributors, and composed as follows:—The President for the time being of the Representative Board of the British Dental Association (if he be eligible as a contributor to the Fund), and six contributors to the Fund of a sufficient sum each to be entitled to vote, being also members of the British Dental Association, two of whom shall be members of the Representative Board of the Association. These six members may serve for three years from the date of inauguration of the Fund, at the expiration of which period, one-third of the members shall retire. After the third year, one-third of the members shall retire annually, and shall not be eligible for re-election until the expiration of one year. The Committee may determine by ballot, when necessary, which two members shall retire.

XI.—The Committee shall prepare and cause to be issued to the contributors to the Fund one week at least before each Annual General Meeting, a list of persons eligible to serve on the Committee for the ensuing year, stating the names of the two members of the Committee who are ineligible for re-election. The list shall contain the names of six members of the Representative Board, being contributors to the Fund, and twelve other contributors to the Fund, being members of the British Dental Association.

XII.—At the annual election every voter may erase any name or names from the list, and may substitute the name or names of any other person or persons eligible to serve on Committee, but the number of names on the list after such erasure or substitution, must not exceed six, including at least two members of the Representative Board, nor shall it contain the names of the two members who are ineligible by bye-law X. Those lists which do not accord with these directions shall be rejected by the scrutineers.

Chairman and Quorum.

XIII.—In the absence of the President of the Representative Board, the Committee shall choose a Chairman from among themselves—three, including such Chairman, shall be a quorum—and a majority of the quorum may make grants, and do all acts within the power of the Committee. The President or Chairman to have a casting vote.

Vacancy.

XIV.—In the event of the death, resignation, or inability to act, of a member of the Committee of Management, the Committee shall elect an eligible person to fill the vacancy until the next Annual General Meeting.

Functions of Committee.

XV.—The Committee of Management shall have power to appoint officers and servants, and remove the same; fix the remuneration to be paid to, and the services to be performed by, such officers and servants respectively; make such orders and regulations for the management of the Fund (not inconsistent with these Rules) as they may deem expedient; direct the investment of, and control and distribute the funds; decide on all applications for relief, and the amount and mode of affording it, observing in all cases strict privacy in the distribution; order payments and sign cheques on account of the Fund at the bankers mentioned in Rule XXII., such cheques to be signed by the Chairman for the time being, and one other member of the Committee present at the meeting at which the said cheques are ordered to be signed; give receipts for all moneys, or delegate that power from time to time to such person or persons as they may think fit; and generally conduct the affairs of the Fund.

Limit of Grants or Payments.

XVI.—The Committee of Management shall in no case make any grants or payments by which the donations, bequests, or income of future years shall be anticipated or appropriated.

Relief to Contributors, and Non-Contributors.

XVII.—Non-contributors shall not be eligible for relief until the applications from contributors have first been dealt with, and contributors being two years in arrear with their annual payments shall be classed as non-contributors.

District Committees, &c.

XVIII.—The Committee of Management may seek advice and assistance from the Councils of the Branches of the British Dental Association, and shall also be empowered to promote the formation of local Committees in reference to applications for relief from persons resident within their respective districts, but it shall not be bound by the decision of any such local Council or Committee.

Meetings of the Committee.

XIX.—The Ordinary Meetings of the Committee of Management shall be held at the Offices of the British Dental Association at such times as the Committee may think fit, but not less frequently than twice a year. Any two members of the Committee may at any time require the Secretary to convene an Extraordinary Meeting of the Committee, and the Meeting shall be convened accordingly by notice stating the object of the Meeting, which notice shall be sent, under cover, marked private, to each member of the Committee at least three clear days before the time appointed for holding the same.

Annual General Meeting.

XX.—A General Meeting of the contributors of the fund shall be annually held, at such place and during such period as the Annual General Meeting of the British Dental Association is held, and at such meetings a report of the Committee of Management shall be presented, containing the names of all contributors to the Fund (which names need not, however, be read out), a statement of the number and amount of all grants made and assistance afforded during the past year, up to and inclusive of the 31st of December or the 30th of June, according to the period of Meeting; and of the general state of the funds on either of the latter days next preceding the Annual Meeting of the British Dental Association; but in such report the names of the applicants for, and the recipients of, assistance rendered by the Fund shall not be stated or published; the accounts of the Fund shall be produced with the report of the Auditors thereon; vacancies (if any) in the number of the Trustees shall be filled up in accordance with Rule IV.; the Committee of Management for the ensuing year shall be elected in accordance with Rules X. and XI., and the Auditors shall be appointed in accordance with Rule XXI.

Auditors.

XXI.—At the Annual General Meeting three contributors of the Fund, not being Trustees or Members of Committee, shall be appointed Auditors for the ensuing year, the audit of any two to be considered sufficient. They shall go out of office at the Annual General Meeting next after their election, but shall be eligible for re-election.

Bankers.

XXII.—The uninvested funds of the institution shall be kept in the name of the Fund, at a Banker's, to be selected by the Committee of Management, who may draw cheques on the same, as directed in Rule XVI. All sums received on account of the Fund shall be lodged with the Bankers. The first Bankers shall be the Bank of England, Western Branch, London.

Trustees.

XXIII.—The Trustees shall, from time to time, pay over the capital arising from the property of, or belonging to the Fund to, or permit the same to be received by, the Committee of Management for the time being, as such Committee may direct; and the direction of the Committee for the time being, acting under the authority of a Special General Meeting, according to Rule IV., shall be a sufficient authority to the Trustees for making such payments.

Extraordinary General Meeting.

XXIV.—An Extraordinary General Meeting may be called as often as the Committee of Management shall deem necessary, or whenever that Committee shall be required to do so in writing by twenty contributors to the Fund (entitled to vote) specifying the object for which the said contributors desire such meeting to be called; and no business shall be transacted at such meeting, or at any adjournment thereof, other than that specified in the requisition.

Number of Contributors requisite to constitute a Meeting.

XXV.—The presence of at least ten contributors to the Fund shall be necessary for the transaction of business at a General Meeting, and sixteen at an Extraordinary General Meeting, and at such Meeting, when called by requisition, three-fourths of the requisitionists must be present, and if the numbers in each case be not present within half-an-hour of the time appointed, the contributors present shall adjourn the meeting.

Revocation or Alteration of Rules.

XXVI.—The rules of the Dental Benevolent Fund, may from time to time be revoked or altered, and new rules may be made at any Annual General Meeting consisting of not less than twenty contributors, by the vote of not less than three-fourths of the contributors present. But notice of any motion for such alteration of rules must be given to the Committee of Management at least one month before the meeting, who in summoning

the meeting shall state in the notices that an alteration of the rules is contemplated, and also the nature of the alteration.

Notice.

XXVII.—All notices required by these rules may be sent by post, but publication in the Journal of the Association of all impending business, shall in all cases be considered sufficient notice, provided the conditions of time be complied with.

THE FORMATION OF THE MATRIX OF DENTINE: OF THE SHEATHES OF NEWMAN, AND THE FIBRIL OF TOMES.

By R. R. ANDREWS, D.D.S., Cambridge, Mass.

(Concluded from p. 801.)

I look upon the odontoblasts, from continued observation, as having the same function as osteoblasts; and the function of the osteoblast, as I observe it, is only to form the matrix of bone. I believe with Dr. Sharpey, that the lacunæ cells are bodies or cells left between the calcifying osteoblasts, having a different function. It will be remembered that the ameloblast or enamel-forming cell calcifies, and loses its individuality when calcified, leaving no trace of any former structure. Bödecker has beautifully shown that a very slight beaded filament or fibril, is found *between* the calcified rods. Those beaded fibres I propose we shall name in honour of the discoverer, the fibrils of Bödecker.

Those of you who have followed my paper closely will have found my conclusions to be:

1. That the odontoblast calcifies and forms only the matrix, or basis substance, of the dentine. When it is fully calcified, it has lost all signs of form and contents. Having no membrane, it merges into its neighbours, and forms the hard portion of the dentine, in the same manner that the osteoblasts form bone.

2. That the sheathe is formed by that portion of the surface of several odontoblasts that enclose the fibril or filament which passes between them. The portion of the odontoblasts enclosing the fibril only partially calcifies, and is composed of that peculiar substance found everywhere on the border land of calcification—a substance singularly indestructible.

3. That the fibril found within the sheathe between the calcified odontoblasts is a filament either from a nerve bundle or from some other element deep with the formative pulp.

From continued observation, I am inclined to think it comes direct from one of the many nerve bundles.

I feel certain, from what I have seen, that later and better observers will prove that I am not wrong in my conclusions. These I arrived at nearly seven years ago. It is gratifying to me to find that so late and so eminent a writer as Klein, in his investigations on this subject, agrees with me on, at least, one important point. Thus, in his "Atlas of Histology," page 185, he says :

"I cannot convince myself of the now (since Waldeyer) generally accepted theory, according to which the peripheral part of cell substance of the odontoblast is transformed into the matrix of the dentine, while the central part persists as the dentine fibre. From my observations, I am, on the contrary, led to assume that the superficial layer of cells, or odontoblasts proper, *yield only the dentinal matrix*, while the dentinal fibres are derived from the processes of the cells of the deeper layer ; that is, of the cells wedged in between the odontoblasts just referred to."—*New England Journal of Dentistry*.

A HISTORY OF DENTISTRY FROM THE EARLIEST PERIOD TO THE PRESENT TIME.

By GEORGE H. PERINE, D.D.S., New York.

(Concluded from p. 803.)

The belief in dental worms still existing, many ridiculous and singular statements have been made regarding these myths. It is stated that Olig Jacobeus, having excavated from the cavity of a diseased tooth the carious deposit, saw a worm come from it which lived in water for some time. It is quite reasonable to presume that a microscope in the hands of Olig, or, more correctly speaking, beneath the corina of his eye, would have proved his worm a creature of his imagination. But science was in its infancy, and he was consequently permitted to indulge in the harmless pastime of seeing diminutive snakes to his heart's content.

Philippe Salmuth practiced under the same belief, but his faith in worms was entirely eclipsed by his belief in golden and iron teeth, which the Dentists of the seventeenth century believed to actually exist, the presence of which they explained by various theories too ridiculous to mention.

Horetius, who wrote in 1595, described a tooth of gold with which a child was said to have been born.

Before closing this chapter we will refer to a few writers

and practitioners whose reputations are of sufficient prominence to entitle them to mention.

Louis Crow opposed the lancing of gums before extracting teeth and recommended the loosening of teeth by moving them backward and forward instead of removing them, as was generally practiced.

Vauguion, though he advanced Dental surgery but little, was by no means favourably disposed toward the employment of the lancet prior to extraction, except in cases of broken or projecting teeth where the "pelican" could not obtain a firm hold.

Henry Meibomeus was evidently but little acquainted with the diseases of the antrum. He entertained the erroneous idea that the mucous membrane of the maxillary sinus was the cause of the disease. "Some practitioners," says this writer, "endeavour to introduce various medicines in the form of vapour into the antrum, but the best method is to make an opening by extracting a tooth, as the matter can then escape readily." Meibomeus' father, who was a physician of prominence, practiced with success the same method. By referring to that portion of our work devoted to the practice of the specialty in England, it will be seen that Dr. Nathaniel Hyghmore, in 1643, made some very valuable discoveries regarding the antrum, by whom it was named.

Schneider, of Wittenburg, an anatomist of ability, published, in 1661, a treatise entitled "Dr. Catarrhis," in which he explained that the secretions of the nose came not from the brain, as was generally believed, but from the membrane of the olfactory organ.

Benjamin Martin issued, in 1679, a volume which he called "A Dissertation upon the Teeth." It treated of the nature of the teeth, their sensibility, their development and diseases, but did not advance any theory or method by which they could be preserved. This work, despite its incompleteness, was conceded to be one of equal value with that of Hunard's, which was published in France in 1582.

From the foregoing statements, it will be seen that the veil of superstition, ignorance and bigotry, which had for so long a period enveloped matters relating to the practice of the specialty, and in a great measure retarded its improvement, began in the seventeenth century to dissolve before the light of reason and the advancement of thought and sounder judgment. The literature of Dentistry may be said to have sprung into existence about this time, for, during the seventeenth century, more than forty works upon the teeth made their appearance, in addition to numerous general treatises which contributed many valuable ideas to a rapidly developing knowledge.—*New England Journal of Dentistry.*

British Journal of Dental Science.

LONDON, SEPTEMBER 15, 1883.

TO DENTAL STUDENTS.

WE annually devote the Mid-September number of our Journal to the especial interests of Dental Students. In it are set forth the various modes of entering our profession, and, having entered, full particulars of the hospitals and places of study, and of the licensing bodies which are entitled by law to grant the diploma in Dentistry, and at the same time we avail ourselves of the opportunity to give a few words of kindly advice and encouragement to the student.

Whilst there are other professions presenting greater rewards or greater social dignity, the one you are about to enter is an honourable and a useful one; and if the young man, about to join its ranks, does not so esteem it, he would act wisely for himself and others, in retiring.

You should consider well that the profession before you is a matter serious and full of responsibilities; but do not be discouraged by this, for, if a man will only start with a fixed and honourable purpose, and strictly and persistently attempt to carry it out to the best of his ability, undismayed by failure or delay, though the time may be long in coming; yet come it will, when that purpose will be achieved. We cannot too forcibly impress upon the student the value in after life of a sound preliminary education; not that we would insist on great erudition, but rather a cultivated understanding, in order that he may be able to hold his place in the debates and add to the literature of the profession. Each man of higher culture elevates the tone of the whole profession. We will not here give you a detailed account of the manner in which it is best to pursue your professional studies: all our

hospitals and medical schools have attached to them competent teachers, who will direct them, and who are ever ready to help those who help themselves. The wise student will do well to bear in mind that prudent thought and well considered purpose have laid down the curriculum which is demanded of him, and he should consider it his duty to follow out, to the letter, its minutest details. There are many temptations to idleness and self-indulgence in a student's life; these you must strenuously avoid and guard against, by a firm determination to resist, and by moderate participation in rational enjoyment, and selecting as your associates those of refined mind, intellectual bias, and honourable disposition. To the mechanical portion of your studies—as it is of great importance—you should direct your assiduous attention. It has been the fashion to separate hand work from head work as if the two were incompatible. One was for mechanics and the other for professional people only—one for the rich and one for the poor; but we are gradually learning that their harmonious union is the only means of the perfection of either. Ruskin says, “we want one man to be always thinking, and another to be always working, and we call one a gentleman and the other an operator; whereas the workman ought often to be thinking, and the thinker to be often working, and both should be gentlemen in the best sense. The mass of society is made up of morbid thinkers and miserable workers. It is only by labour that thought can be made healthy, and only by thought that labour can be made happy, and the two cannot be separated with impunity.” The final examination appears very formidable. Most objects when seen through a haze are very formidable and loom on the beholder in unnatural proportions; but as the student progresses in his course of study, he will find that they are not so gigantic as they seem when seen through the mist of inexperience. There are plenty of men who have neither the wish nor the power to be energetic. Neither hard work nor downright idleness is to their taste. They like something between the two—a make-believe sort of work—a decent, respectable way of getting on, on easy terms and at no mental exertion whatever. Such men should not be your

models. To do things with a hearty enthusiasm is often what makes the doer a marked person, and his deeds effective; the most ordinary work is dignified when performed in that spirit.

We trust that these few remarks will encourage you to go earnestly to work, and discharge honourably the duties of your calling, bearing in mind that your grand object—during the time of your pupilage—should be the acquisition of such knowledge as, when that time is over, will enable you to assist in alleviating the sufferings of your fellow men.

BENEVOLENT FUND.

WE hail with pleasure the fact that a Benevolent Fund has been inaugurated. It is true it falls far short of the liberality that we should have liked to have seen, still it is a something tangible, and we feel little doubt that in course of time either the wisdom of reforming it in this respect will be acknowledged, or that a second on more genuinely Benevolent principles will be founded.

All who have ever had experience in the formation of such charities will readily admit the enormous difficulties under which the working promoters labour, and make liberal allowance for any shortcomings on their part. But to our minds the cardinal error has been the endeavour, more or less persistently made, to render the Benevolent Fund practically subservient to the interests of the Association. This was first shown by the Representative Board of the Association considering the subject "premature" for several years, and next by the ill-advised paragraph which appeared in the circular, that "in *all cases* the members of the Association" would have precedence of claim over others. We pointed out at the time the probable effect of such a restricted and partial benevolence, and now find the Secretary (Mr. Smith Turner) bitterly complaining that this easily anticipated effect has been the actual result. Mr. Renshaw said, "I must admit I am one who have not responded. I have been waiting." The Secretary remarked, "That's what you all do. You all wait." Why

of course men wait. Before promising or sending money, they naturally wish to know on what principles and under what control it is going to be disbursed.

The Executive of the Association have not yet gained the full confidence of even their own members, let alone the whole profession; and we much doubt if the Rules of this Benevolent Fund, when studied, will help to so desirable an end. An attentive perusal of the most interesting discussion will show that the measure has been somewhat forced upon them, and that it is looked upon by many rather as a stepping stone to the advancement of the Association, than purely for benevolent purposes. No other hypothesis can reconcile some conflicting passages, or even the tenor of the Rules themselves.

It was announced that "In drawing up the Rules, those of other charities had been consulted, and the Representative Board desired that members of the profession *outside* the Association should, as far as possible, be admitted to its benefits." We will now see how far this is possible from the working of the Rules, which we will compare with those of the "British Medical Benevolent Fund."

The objects of the Fund are:—

BRITISH DENTAL ASSOCIATION.

To afford, privately, pecuniary relief when practicable, FIRST, to necessitous and deserving members of the British Dental Association, being contributors to the Fund, their widows and orphans; and SECONDLY, to such necessitous persons as are or have been Dentists, and have not been members of the British Dental Association or contributors to the Benevolent Fund, but who, in the opinion of the Committee of Management, may be deserving objects of relief; and to the widows and orphans of Dentists who were not members of the British Dental Association, or contributors to the Fund at the time of their decease.

BRITISH MEDICAL.

1. (Donation Department).—To afford immediate pecuniary relief to qualified members of the Medical profession, their widows and orphans.
2. (Annuity Department).—To grant annuities to such after 60 years of age.

It will be noticed at starting that with the British Medical there are no conditions or qualifications except *deserving necessity*.

Not so with the British Dental, which begins by, as it were, dividing the profession into four classes, viz.:—

1. Members of the British Dental Association being subscribers to the Fund.

2. Subscribers not being members of British Dental Association.

3. Members of the British Dental Association not being subscribers.

4. Those being neither members nor subscribers.

Of these four divisions, if the "object" be literally construed, only the first and fourth are eligible for relief at all. But setting this aside as an inadvertence "adopted *en bloc*," and apparently without consideration, can anyone defend on benevolent principles, the partiality of selecting *Members* of the British Dental Association as recipients of relief *before* other *subscribers*. Surely as a simple matter of justice *all* subscribers should be on an equal footing. Given this amendment, few could object to Rule XVII., at all events while the Benevolent Fund is young and weak of means.

But if the "Representative Board" honestly wish to include "non-subscribers" in the possible advantages, what shorter sighted policy could they possibly have followed than restricting the "Management" of the Benevolent Fund entirely to members of the British Dental Association?

We do not for a moment suggest that seven gentlemen—because they are members of the Association—would allow that fact to bias their opinions, or make them conspire to give the advantages of the Fund to necessitous brother members. But with their hands tied by such rules as are laid down, whatever their conscientious convictions might be, they would seemingly be bound to relieve the slightest cases of members before even the most deplorable and heartrending of other subscribers or non-subscribers. What is likely to be the effect of such curtailed benevolence on the liberal and sympathising non-dental public? Would they not be likely to conclude that, if in subscribing to the Dental Benevolent Fund they were, in practical reality, only offering help to a restricted few of the Dental profession, their money had better be given where more justice prevailed?

It is much to be regretted that some such genuinely straightforward plan as that brought forward by Mr. Bowman McLeod, in his paper read before the Scottish Branch of the British Dental Association on March 13th, 1883, and published in the April 16th No. of this Journal for this year, had not been made the basis of rules and management of the Fund.

Had the Fund been connected with the Association, but so far independent of it as to be managed by a certain number of subscribers only—a due proportion being members of the Association—appointed by the subscribers as a body, and left to decide cases brought under their notice on their own merits, and without any restrictive rules of partiality or preference, we have no hesitation in affirming that such a healthy form of Benevolence would both in the past and the future materially affect both friends and funds.

Nothing could be more touching than the description of what the object of a Benevolent Fund should be than that of Mr. Bowman McLeod's, viz.:—"A love gift, gathered together by the benevolent out of the fullness of their means, to meet by timely help the needs of those unfortunates who may be overtaken by calamities such as cannot be anticipated by the law of averages, or foreseen by the most prudent and careful. Let it then be distinctly understood that if you give, it is in the hope that you may never receive, and that no subscription, however large, can constitute a *claim*, although it may be adduced as a strong reason in support of a claim; otherwise, where is your Benevolence?"

JOHN SUGDEN CRAPPER may be honestly and heartily congratulated on the result of his practical, but unassuming paper, on the "Formation of a Benevolent Fund," read before the Midland Counties' Branch of the British Dental Association, April 26th, 1882. When we commented on it in the June 1st issue of this *Journal*, and said that "to the end of time will the name of John Sugden Crapper be associated in all honour and charity—as its practical founder—with a Dentists' Benevolent Fund, that must, in the not distant future, be called

into existence," it may be remembered that no less than two issues of the "Journal of the British Dental Association" had been issued, without mentioning a word about the subject of Mr. Crapper's paper, although his name, in connection with some paper, was twice mentioned. In the same issue we published his paper in *extenso*, and in the *following* issue of the "Journal of the British Dental Association" it appeared without comment. From these circumstances and the fact that at its reading discussion was stopped, or checked, as being "premature,"—certainly never reported—it might have been thought that his paper was of little or no importance. Not so, however, for at the Plymouth annual meeting of the British Dental Association, just held, Mr. Dennant—than whom none could know better—naively admits that he would have preferred had "the Fund been delayed for two or three years," but that he changed his mind, and was "In fact stirred into action very much by Mr. Crapper and other gentlemen, who evidently supposed we were going to sleep and neglecting our duty." It is therefore admitted that to Mr. Crapper the present inauguration of the Benevolent Fund is primarily due, and perhaps in no small measure to the influence of this journal, which has so persistently advocated it. But for the publicity given by us to Mr. Crapper's paper, it seems doubtful if to this day it would ever have appeared, and possibly the useful work of this annual meeting might have been postponed indefinitely.

As it is, although the response may have been small to what might have been expected, had the Benevolent intent been more apparent as being totally disinterested; yet it ought not to be forgotten that by forming it *this year*, by next annual meeting it will be just £100 richer by annual income, irrespective of whatever further enterprise and publicity may produce. This is but another instance of what one man, by genuine single-mindedness, may accomplish, even where a powerful and organized body may find almost insuperable difficulties.

THE letter which we published in our last issue from Mr. A. Coleman, is, we are glad to say, having the desired effect, and already valuable specimens are coming to hand.

Mr. Coleman desires to thank the donors publicly through our columns, and we are glad to award them honorable mention.

The following gentlemen have sent specimens, viz.: Mr. Lloyd Poundall, Brighton; Mr. Levi Holmes, Bradford; Mr. T. Buckley, Oldham. We shall publish, from time to time, the names of the gentlemen who contribute.

A HOUSE-TO-HOUSE visitation and inspection of the Hackney district, under the superintendence of the medical officer and efficient sanitary staff, has commenced; particular attention being paid to the water supply. A code of health instructions, and notices requesting the immediate notification of choleraic disease have been issued and circulated throughout the district. It would be well if some of the other districts followed the example of Hackney.

A CORRESPONDENT, in a recent issue of a contemporary, in speaking of the preparation of water for drinking, says: "‘Boil and filter,’ is, I think, a better rule than ‘filter and boil.’ In either case no doubt the water is made safe, but it is only in the former case that it is again made palatable. Boiled water is very unpleasant to drink, as it has lost in that process all its æration. My plan for years has been to have a tin can large enough to contain all the water usually drunk in a day, filled from the kitchen boiler when the cooking is in full swing and the water actually boiling. This can is placed beside the filter until the next morning to cool, and then the filter is filled up and the can refilled with boiling water. The filtering completely affects the re-æration of the water, and no one would suspect that it had been boiled. Many people would sooner drink pleasant tasting, though vitiated water, than pure water which has lost its air, and to induce such people to boil their water it is necessary to re-ærate it. Therefore boil first and then filter."

"POOR MAN," exclaimed the physician, as he approached the patient's bed, "he seems to be suffering from neuralgia." "You're mistaken," said the sick man, "Her name isn't neuralgia, it's Maria; and we've only been married six months."

A CERTAIN examiner was examining a student, and the young man, being nervous, failed utterly on the first question put to him, a very simple one. "Bring this gentleman a bundle

of hay for his breakfast," remarked the disgusted examiner to one of the attendants. "Bring two," added the student, who thus suddenly regained consciousness and asserted his self-possession, "the professor and I will breakfast together."

At a recent meeting of the French Association for the Advancement of Science, Dr. Deshayes exhibited an interesting case of zona of the mouth, limited to regions supplied by the inferior dental nerve and the lingual nerve. The tonsils, floor and roof of mouth, tongue, gums, the incisors, canines and molars, the lower lip, and a portion of the skin of the chin, were the seat of the pains which, as regards the soft parts, were soon followed by the eruption. The teeth are at the present time—a year after the disease—entirely exempt from erosion, and no disturbance in the function of teeth has taken place. The only probable cause of the affection was exposure to damp and cold. The patient was somewhat of a nervous subject, but exempt from any diathesis. The interest of the case rests in the fact that zona may affect several branches of a nervous trunk to the exclusion of others.

Two Nottingham chemists have each been fined £5, on a prosecution by the Health Committee of the Corporation, for having sold adulterated lime-water. On analysis, the lime-water was found to be deficient in lime to the extent of over 40 per cent. Both the defendants pleaded guilty.

APPOINTMENTS.

T. H. COLEMAN, F.C.S., has been appointed Hon. Dental Surgeon to the Wrexham Union.

Mr. ALBERT E. EMERY has been appointed Hon. Dental Surgeon to the Longton Cottage Hospital.

VACANCIES.

DENTAL HOSPITAL, LEICESTER SQUARE.—Lecturer on Anatomy and Physiology to the above Institution. Applications on or before Oct. 7th, 1883, to the Dean, J. Francis Ken Underwood.

MANCHESTER DENTAL HOSPITAL.—Lecturers on Dental Surgery and Pathology, and Dental Anatomy and Physiology, to the above Institution. Applications to be made on or before Oct. 1st, 1883, to the Hon. Sec., Mr. Thomas North, 96, Bloomsbury, Oxford Road, Manchester.

Manipulative Miscellany.

All instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month; they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits, and without any intention or wish to put one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

NITROUS OXIDE GAS QUIETER.

THE DENTAL MANUFACTURING COMPANY introduce a "quieter," for the purpose of stopping the sudden and sometimes—to the patient—alarming hisses produced by gas passing suddenly from the gas bottle to the bag. It is in the form of a tube of one inch diameter, and about eleven inches long, attached by the ordinary union to the gas bottle at one end, and to the bag by the usual elastic tube at the other. This tube is so filled or constructed within, that the gas as it rushes from the bottle, is divided into innumerable channels, neutralising the direct waves of sound, and thus producing almost absolute quietude. It is, we understand, a modification of Justice's patent, adapted to meet dental requirements by the patentee, and the Dental Manufactory Company are the sole agents for Dental purposes.

RICHIE'S NEW BEARINGS FOR LATHE HEAD.

MR. RICHIE has introduced a novel bearing for lathe head. The one under notice is double ended, fitted for varying grinding wheels, drills, &c., on one side, and with left threaded taper screw mandril on the other, suitable for any sized polishing brush or disc. The bearings, instead of being of the usual double cone system, on the mandril are cut a series of shallow, square edged grooves. These run in corresponding grooves in adjusted collars of special white metal, so constructed in segments, that they can be closed by screws as they wear, and thus keep the lathe head always true and steady. These collars are so arranged, that as in course of time they wear out, they can be renewed with ease, keeping the lathe head practically always new.

ODONTALITE.

UNDER the above name, Messrs. Smale Bros. introduce another white filling, which they speak of as having been eight years in use, and state that stoppings of it have been examined after being two years in the mouth, and found "as good and as sound as when inserted."

It is spoken of as non-irritant, a non-conductor of thermal changes, adhesive and readily hardening, even in contact with saliva, and therefore recommended as a temporary filling for sensitive teeth, and also for the temporary teeth.

From very limited trial, we can only say that it works smoothly, sets well under moisture, gives ample time for manipulating, and that the color (brown yellow) matched well with the teeth that were experimented upon.

Mr. J. S. DICKIN'S MIRROR, WITH ELECTRIC LAMP
ATTACHED.

WE are informed that this ingenious apparatus (which was described p. 609), can now be obtained of Messrs. Cottrell and Co., Liverpool.

Correspondence.

[We do not hold ourselves responsible for the opinions expressed by our Correspondents.]

To the Editor of the "British Journal of Dental Science."

SIR,—I think N. Z. will find nowhere in Dr. Campbell's book, that rubber can be vulcanized in one hour, or one hour and fifteen minutes, either.

Using steam, I vulcanize from 2 to 2½ hours, and by dry heat, which I prefer, 5 hours; working with a steam gauge. Thermometers I discarded over four years ago, to my great comfort, though I have to increase the time required by so doing.

Celluloid is more hardened worked with the new mode than by other methods, and so for over twelve months I find it wears better.

Let N. Z. try again, and I believe he will not blame, but praise the new mode as I do.

Yours, &c.,

J. S. DICKIN.

[We have other letters on this subject, which for want of space cannot be published yet.—ED.]

MONTHLY REPORT OF CASES TREATED AT THE DENTAL HOSPITAL OF LONDON.

FROM AUGUST 1ST TO AUGUST 31ST, 1883.

Extractions	Children under 14	522
	Adults	962
	Under Nitrous Oxide	294
Gold Stoppings		93
Plastic ditto		493
Irregularities of the Teeth treated mechanically		47
Miscellaneous Cases		98
Advice Cases		129

Total 2638

H. L. PILLIN, *House Surgeon, pro. tem.*

MONTHLY REPORT OF CASES TREATED AT THE NATIONAL DENTAL HOSPITAL, FROM AUGUST 1ST TO AUGUST 31ST, 1883.

Number of Patients attended 1530

Extractions	Children under 14	468
	Adults	972
	Under Nitrous Oxide	305
Gold Stoppings		65
Other Stoppings		248
Advice and Scaling		237
Irregularities of the Teeth		50
Miscellaneous		120

Total 2465

CHAS. W. GLASSINGTON, *House Surgeon.*

CORRECTION.—Errata.—In our report of the British Dental Association, Sept 1st, in some places read J. T. Browne-Mason, for Henry B. Mason. J. T. Browne-Mason, is Treasurer, Western Branch, British Dental Association. Henry B. Mason is Hon. Secretary, Western Branch, British Dental Association. Also read Woodhouse for Wodehouse wherever found.

ANSWERS TO CORRESPONDENTS.

G. Crocker.—It is very common, and will die out as education increases.

Communications have been received from Messrs. Alfred Coleman (Streat-ham), A. S. Underwood (London), G. Crocker (Manchester), T. Thodes (Keighley), T. H. Coleman (Wrexham), T. W. North (Manchester), Thompson (Brussels), A. Harvorth (Leek), Cotterell & Co., (Liverpool), G. A. Blectson (London), The Truth (Cape Town), Leslie Maxwell (Orten Waterville), Smale Brothers, (London), Dental Manufacturing Company, (London), J. Bethric (London), J. T. Browne-Mason (Exeter), Henry B. Mason (Exeter), G. H. Snape (Liverpool), J. S. Dickin (Southport), W. Grayston (Scarboro'), J. P. Main (Southport).

BOOKS AND PAPERS RECEIVED.

"Lancet." "British Medical Journal." "Pharmaceutical Journal." "Glasgow Medical Journal." "Monatsschrift des Vereins Deutscher Zahn Kunstler." "Dental Luminary." "L'Odontologie." "London Hospital and Medical College Report." "University of Michigan Report." "Gazette des Hopitaux." "Le Progrès Dentaire." "El Progreso Dental de la Habana L'Odontologia." "Southern Dental Journal." "Independent Practitioner." "Dental Record." "Report of Manchester Dental Hospital." "Report of Odontological Society." "Edinburgh Dental Hospital and School." "Prospectus of the Royal College of Surgeons Edinburgh." "Prospectus of the Faculty of Physicians and Surgeons Glasgow."

British Journal of Dental Science.

DENTAL STUDENTS' SUPPLEMENT.

SEPTEMBER 15, 1883.

I.—THE LICENSING CORPORATIONS.

COMPARATIVE SUMMARY OF REGULATIONS FOR THE LICENSE IN DENTAL SURGERY.

	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.*	Faculty of Physicians and Surgeons, Glasgow.
1. PRELIMINARY EXAMINATION	Compulsory on all who commenced their Professional Education after July 22nd, 1878	Compulsory on all who commenced their Professional Education after August 1st, 1878	Compulsory on all, except in the case of the modified Examination, <i>vide infra</i>	Compulsory on all who commenced their Professional Education after August 1st, 1878
2. AGE at which the Candidate may present himself	Twenty-one	Twenty-one	Twenty-one	Twenty-one
3. DURATION OF PROFESSIONAL EDUCATION	Four years	Four years	Four years	Four years
4. COURSES OF LECTURES, &c., to be attended at a recognised School:	Two Courses or one Course and twenty Lectures on Head and Neck	One Winter Course	One Course	Two Courses, or one Course and 20 Lectures on Head and Neck
Anatomy				

* Corrections not having been received from this College its accuracy cannot be guaranteed.—Ed.

	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
1. COURSES OF LECTURES &c. (continued) —				
Physiology	One Course	One Course of 50 Lectures	One course	One six months' Course
Surgery	Ditto	One Winter Course	Ditto	Ditto
Medicine	Ditto	Ditto	None	Ditto
Chemistry	Ditto	Ditto	One course	Ditto
Materia Medica	One Course	One three months' Course	Ditto	One three months' Course
Dissections and Demon- strations or		Nine months	Two courses	Nine months
Dissections and	Nine months	Nine months		
Anatomy of Head and Neck		One Course of 20 Lectures	One Course	One three months' Course
Practical Chemistry and Metallurgy	One Course of each	One three months' Course		
Practice of Surgery and Clinical Lectures	Two Winter Sessions	One six months' Course, or two three months' Courses	Two Winter Sessions	One year
Dental Anatomy and Phy- siology	Two Courses	One Course	None	Twenty-four Lectures
Dental Surgery	Ditto	Ditto	} Two Courses	Twenty Lectures
Dental Mechanics	Ditto	Ditto		Twelve Lectures or Demon- strations
Practical Instruction in Mechanical Dentistry	Three years under a competent Practitioner	Three years under a Registered Dental Practitioner	Three years under a Re- gistered Dental Li- centiate	Three years under a Registered Practitioner
Practice of Dental Surgery in a recognised Dental hospital, or in the Den- tal department of a re- cognised general hospital	Two years	Two years	Nine months	Two years
5. FEE	£10 10s. over and above stamp duty	£10 10s.	£10 10s.	£10 10s.
6. LEAST period during which unsuccessful Can- didates are referred to their studies	Six months	Three months	Six months	Three months

7. PARTICULARS OF EXAMINATION

(A) *Written:*
On General Anatomy and Physiology

General Pathology and Surgery (both with especial reference to Dental practice)

(B) *Oral:*
On all the subjects in the Curriculum, Casts, and Preparations, Drawings, Fillings, Cases for Diagnosis, Instruments, &c.

8. DATE OF EXAMINATION

February, June, and October

9. MODIFIED EXAMINATIONS, OR EXAMINATIONS *sine curricula:*

(a) Conditions of eligibility

Candidates must have been in Practice or have commenced Professional Education prior to September, 1879

(b) Certificates, &c. required

One of moral character signed by two members of the College or two Licentiates of the Licensing Bodies in the country where the education was received

Written and Oral:

First Part—Anatomy, Physiology, Chemistry, and Metallurgy

Second Part—Surgery, Medicine, Materia Medica, and special Dental subjects

First Part—1883.

Tuesday, October 16
" 1884 " January 22
" " March 25
" " April 15
" " July 15

Second Part—Following Thursday

Candidates must have been in Practice before August 1st, 1878, or apprenticed before August 1st, 1875

One of moral and professional character signed by two Registered Medical Practitioners

Written and Oral:

On all the subjects of the Curriculum

Preparations, Microscopes, and other appliances

October 39th, 1883, and following days

After the 1st day of August, 1881 (?) no candidate shall be admitted to examination who has not pursued the above curriculum

Written, Oral, and Practical:
First Part—Anatomy, Physiology, Chemistry, and Metallurgy

Second Part—Surgery, Medicine, Materia Medica, and special Dental subjects

Practical Examination at a Dental Hospital. Candidates are to bring Excavators, Files, and Plugging Instruments

1883—October 15—17
1884—January 10—12
" April 3—5
" July 21—23

Candidates must be Registered Dental Practitioners in Practice before August, 1878.

Certificate of moral and professional character signed by two Registered Medical Practitioners

9. MODIFIED EXAMINATIONS (continued) — (b) Certificates, &c., re- quired (continued) —	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
(c) Manner of Examination For further information apply to Secretary	Name Age Professional address Date of commencing Dental practice Whether a Member, Licentiate or Graduate of any British College of Physicians, Col- lege of Surgeons, or Univer- sity, with date of license, &c. Of what learned societies a Member Whether in Dental practice se- parately, or if not, in con- nection with what business Whether he has employed Ad- vertisements or Public No- tices since July 22nd, 1876 Particulars of Professional Edu- cation Same as ordinary Examination EDWARD TRIMMER, Fsq., Royal College of Surgeons, Lincoln's Inn Fields, London, W.C.	Name in full Age Address Date of commencing Dental practice or apprenticeship, and whether if in practice, in conjunction with any other and what business Whether in possession of De- gree or Diploma in Medi- cine or Surgery; if so, what and date Whether practising Dentistry in conjunction with any other business, and, if so, what Particulars of Professional Edu- cation Same as ordinary Examination JOSEPH BELL, Esq. 20, Melville Street, Edinburgh.	<i>Sine curriculo</i> Name Age Address Date of commencing practice Professional status Particulars of Professional Education Same as ordinary Examina- tion ALEX. DUNCAN, Esq., Faculty of Physicians and Surgeons, Glasgow.	Faculty of Physicians and Surgeons, Glasgow.

II.—PRELIMINARY EDUCATION.

REGULATIONS OF GENERAL MEDICAL COUNCIL.

No person shall be allowed to be registered as a Medical or Dental Student unless he shall have previously passed a Preliminary Examination in the subjects of General Education as specified in the following list:—*

1. English Language, including Grammar and Composition. †
2. English History.
3. Modern Geography.
4. Latin, including Translation from the original, and Grammar.
5. Elements of Mathematics, comprising (a) Arithmetic, including Vulgar and Decimal Fractions; (b) Algebra, including Simple Equations; (c) Geometry, including the first two Books of Euclid, or the subjects thereof.
6. Elementary Mechanics of Solids and Fluids, comprising the Elements of Statics, Dynamics, and Hydrostatics. ‡
7. One of the following Optional Subjects:—
(a) Greek; (b) French; (c) German; (d) Italian; (e) any other Modern Language; (f) Logic; (g) Botany; (h) Elementary Chemistry.

List of Examining Bodies whose Examinations fulfil the conditions of the Medical Council as regards preliminary education:—

I. UNIVERSITIES IN THE UNITED KINGDOM.

UNIVERSITY OF OXFORD:—

1. Junior Local Examinations; Certificate to include Latin and Mathematics, and also one of the following optional subjects:—Greek, French, German, Natural Philosophy, including Mechanics, Hydrostatics, and Pneumatics.
2. Senior Local Examinations; Certificate to include Latin and Mathematics.
3. Responsions.
4. Moderations.
5. Examinations for a Degree in Arts.

UNIVERSITY OF CAMBRIDGE:—

6. Junior Local Examinations; Certificate to include Latin and Mathematics, and also one of the following optional subjects:—Greek, French, German, Natural Philosophy, including the Elements of Statics and Hydrostatics.

* The Examinations in General Education conducted by Universities will be accepted as heretofore, but if in any of these Examinations the subjects of Elementary Mechanics of Solids and Fluids are not included, the Candidate must pass in one or other of the remaining optional subjects instead, and a knowledge of Elementary Mechanics will be required at a subsequent Examination.

† “The General Medical Council will not consider any Examination in English Language sufficient that does not fully test the ability of the Candidate:—(1) To write sentences in correct English on a given theme, attention being paid to spelling and punctuation as well as to composition;—(2) to write correctly from dictation;—(3) to explain all the grammatical construction of sentences;—(4) to point out the grammatical errors in sentences ungrammatically composed, and to explain their nature; and (5) to give the derivation and definition of English words in common use.”

‡ “This subject may be passed either as preliminary, or before, or at the first Professional Examination.”

7. Senior Local Examinations; Certificate to include Latin and Mathematics.
8. Higher Local Examinations.
9. Previous Examination.
10. Examination for a Degree in Arts.

UNIVERSITY OF DURHAM:—

11. Junior Local Examinations; Certificate to include Latin and Mathematics, and also one of the following optional subjects:—
Greek, French, German, Natural Philosophy, including Mechanics, Hydrostatics, and Pneumatics.
12. Senior Local Examinations; Certificate to include Latin and Mathematics.
13. Registration Examination for Medical Students.
14. Examination for Students at the end of their first year.
15. Examination for a Degree in Arts.

UNIVERSITY OF LONDON:

16. Matriculation Examination.
17. Preliminary Scientific (M.B.) Examination.
18. Examination for a Degree in Arts or Science.

UNIVERSITY OF EDINBURGH:—

19. Local Examinations (Junior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects:—
Greek, French, German, Natural Philosophy.
20. Local Examinations (Senior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects:—
Greek, French, German, Natural Philosophy.
21. Preliminary Examination for Graduation in Science or Medicine and Surgery.
22. Examination for a Degree in Arts.

UNIVERSITY OF ABERDEEN.—

23. Local Examinations (Honours Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects:—
Greek, French, German, Natural Philosophy.
24. Preliminary Examination for Graduation in Medicine or Surgery.
25. Examination for a Degree in Arts.

UNIVERSITY OF GLASGOW:—

26. Local Examinations (Senior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects:—
Greek, French, German, Natural Philosophy.
27. Preliminary Examination for Graduation in Medicine or Surgery.
28. Examination for a Degree in Arts.

UNIVERSITY OF ST. ANDREW'S:—

29. Local Examinations (Honours Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects:—
Greek, French, German, Natural Philosophy.
30. Preliminary Examination for Graduation in Medicine or Surgery.
31. Examination for a Degree in Arts.

UNIVERSITY OF DUBLIN:—

32. Public Entrance Examination.
33. Examination for a Degree in Arts.

QUEEN'S UNIVERSITY IN IRELAND:—

34. Local Examinations for Men and Women ; Certificate to include all the subjects required by the General Medical Council.
35. Entrance or Matriculation Examination.
36. Previous Examination for B.A. Degree.
37. Examination for a Degree in Arts.

ROYAL UNIVERSITY OF IRELAND:—

38. Matriculation Examination.

OXFORD AND CAMBRIDGE SCHOOLS' EXAMINATION BOARD:—

39. *Certificate, to include the following subjects:—

- (a) Arithmetic, including Vulgar and Decimal Fractions.
- (b) Algebra, including Simple Equations.
- (c) Geometry, including the first two Books of Euclid.
- (d) Latin, including Translation and Grammar.
- (e) Also one of these optional subjects:—

Greek, French, German, Mechanical Division of Natural Philosophy.

VICTORIA UNIVERSITY:—

40. Preliminary Examination ; Latin to be one of the subjects.

II.—OTHER BODIES NAMED IN SCHEDULE (A) TO THE “MEDICAL ACT.”

APOTHECARIES' SOCIETY OF LONDON:—

41. Examination in Arts.

ROYAL COLLEGES OF PHYSICIANS AND SURGEONS OF EDINBURGH:—

42. Preliminary (combined) Examination in General Education.

FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW:—

43. Preliminary Examination in General Education.

ROYAL COLLEGE OF SURGEONS IN IRELAND.—

44. Preliminary Examination ; Certificate to include Mathematics.

APOTHECARIES' HALL OF IRELAND:—

45. Preliminary Examination in General Education.

III.—EXAMINING BODIES IN THE UNITED KINGDOM NOT INCLUDED IN SCHEDULE (A) TO THE “MEDICAL ACT” (1858).

COLLEGE OF PRECEPTORS:—

46. Examination for a First Class Certificate, or Second Class Certificate of First or Second Division, Algebra, Geometry, Latin, and a Modern Language, having been taken.

EXAMINERS FOR COMMISSIONS AND APPOINTMENTS IN HER MAJESTY'S SERVICE, MILITARY, NAVAL, AND CIVIL:—

47. Certificate to include all the subjects required.

INTERMEDIATE EDUCATION BOARD OF IRELAND.

- | | |
|------------------------------------|---|
| 48. Junior Grade Examination | } Certificates in each case to include all the subjects required. |
| 49. Middle ” ” ” ” | |
| 50. Senior ” ” ” ” | |

IV.—CERTAIN EXAMINATIONS OF INDIAN, COLONIAL, AND FOREIGN UNIVERSITIES AND COLLEGES.

* The *English* is provided for by the following *Resolution*, passed by the Executive Committee on October 27, 1876 (*Minutes*, Vol. XIII, p. 357):—

“That as every Candidate for the Certificate of the Oxford and Cambridge Schools' Examination Board is required to answer questions in such a manner as to satisfy the Examiners that he has an adequate knowledge of English Grammar and Orthography, this shall be held as conforming to the requirements of the Medical Council in reference to English Language.”

III.—EDUCATIONAL BODIES.

LONDON.

DENTAL HOSPITAL OF LONDON AND LONDON SCHOOL OF DENTAL SURGERY, LEICESTER SQUARE.

HOSPITAL STAFF.

Consulting Physician—Dr. J. RISDEN BENNETT.

Consulting Surgeon—CHRISTOPHER HEATH, F.R.C.S.

Consulting Dental Surgeons.

SAMUEL CARTWRIGHT, F.R.C.S.

JOHN TOMES, F.R.S.

Dental Surgeons.

9 a.m.—Monday	DAVID HEPBURN, L.D.S.
„ Tuesday	R. H. WOODHOUSE, M.R.C.S., L.D.S.
„ Wednesday	GEORGE GREGSON, M.R.C.S., L.D.S.
„ Thursday	S. J. HUTCHINSON, M.R.C.S., L.D.S.
„ Friday	HENRY MOON, M.R.C.S., L.D.S.
„ Saturday	ALFRED HILL, L.D.S.

Assistant Dental Surgeons.

„ Monday	F. CANTON, L.R.C.P., M.R.C.S., L.D.S.
„ Tuesday	ARTHUR S. UNDERWOOD, M.R.C.S., L.D.S.
„ Wednesday	C. E. TRUMAN, M.A., M.R.C.S., L.D.S.
„ Thursday	GEO. PARKINSON, M.R.C.S., L.D.S.
„ Friday	STORER BENNETT, L.R.C.P., M.R.C.S., L.D.S.
„ Saturday	CLAUDE ROGERS, M.R.C.S., L.D.S., D.D.S.U.S.

Administrators of Chloroform.

9.30 a.m.—Tuesday and Wednesday ..	J. MILLS., M.R.C.S.
„ Friday and Saturday	F. WOODHOUSE BRAINE, F.R.C.S.
„ Monday	G. H. BAILEY, M.R.C.S.
„ Thursday	T. BIRD, M.A., M.R.C.S.

Demonstrators.

WILLIAM HERN, M.R.C.S., L.D.S.

JOHN ACKERY, M.R.C.S., L.D.S.

Medical Tutor—A. MORTON SMALE, M.R.C.S., L.D.S., L.S.A.

House Surgeon—J. O. BUTCHER, L.D.S.

Assistant House Surgeon—H. L. PILLIN.

Demonstrations.—The Medical Officers will make every effort to give Demonstrations to the junior pupils, on cases selected from time to time, every morning during the Lecture Session; and at the end of the Course those gentlemen who have attended the Demonstrations to the satisfaction of the Medical Officers will be permitted to perform operations at the hospital under the supervision of the Medical Officers and the House Surgeon.

Dresserships for Cases of Extraction.—These appointments are held for two months, and consist of six Senior Dresserships for extractions under anæsthetics, and eighteen Junior Dresserships for ordinary extractions.

The Senior Dressers will be selected from those pupils only who have entered fully both to the practice and lectures of this hospital, and also to the Course required by the College of Surgeons for the Licence in Dental Surgery at one of the general hospitals.

MEDICAL SCHOOL.

The WINTER SESSION will commence on Monday, Oct. 1st.

The SUMMER SESSION will commence in May, 1884.

LECTURES.

Dental Surgery and Pathology, by ALFRED COLEMAN, F.R.C.S. (Exam.),
L.R.C.P., L.D.S., &c.

Dental Anatomy and Physiology (Human and Comparative), by C. S. TOMES,
F.R.S., M.A., M.R.C.S., L.D.S.

MEDICAL TUTOR.

The Medical Tutor attends on four days in the week, from 5 to 7 p.m., for two months previous to two of the Annual Examinations. His classes are open to all Students, and are intended to assist those who are preparing for their examinations at the College of Surgeons, generally speaking, to guide and direct the studies of the pupils, and prepare them in the subjects for the Examinations.

FEES.

GENERAL FEE FOR THE SPECIAL LECTURES REQUIRED BY THE CURRICULUM,

Viz., two Courses on Dental Anatomy, two Courses on Dental Surgery, two Courses on Mechanical Dentistry, and one Course of Metallurgy, £15 15s.

Fee for the Two Years' Practice of the Hospital required by the Curriculum, £15 15s.

Total Fee for the Special Lectures and Hospital Practice required by the Curriculum, **£31 10s.**

Students who perform Operations for Filling Teeth must provide their own Instruments for the same.

Additional Fees for a General Hospital for the two years, to fulfil the requirements of the curriculum, vary from £40 to £50.

PRIZES.

The Prize-day will in future be held in July.

1. Prizes are awarded by the Lecturers for the best examinations in the subjects of their respective courses, at the end of the Summer and Winter Sessions

2. Arrangements have been made for a prize in Operative Dentistry, in the competition for which each candidate is entrusted with the care of a mouth, which he shall, if not impracticable, set thoroughly in order.

3. A prize of the value of five guineas will be given by Mr. George Buchanan, of Glasgow, for the best essay on the following subject:

Dental Caries.—This competition is open to second years' men only.

A prize of the value of five guineas is also given by Messrs. Ash and Sons for the best essay on a surgical subject connected with the mouth.

4. A scholarship of the value of £20 has been founded by Sir Edwin Saunders, and will be awarded to the Student who has obtained the largest number of First Class Prizes during the Winter and Summer Sessions preceding the July in which the award takes place.

Note.—The Medical Committee have resolved, "that the holder of the Saunders' Scholarship be admitted without additional fee to an extra year of hospital practice."

The Dean requests that all Communications relating to the Medical School may be addressed to him at the Hospital, where he will attend in the afternoons, from Sept. 26th to Oct. 1st, inclusive, from 5 till 5.30 o'clock, or on Wednesday mornings from 10.30 till 2.

T. FRANCIS KEN UNDERWOOD, M.R.C.S., L.D.S., *Dean*.

NATIONAL DENTAL HOSPITAL AND COLLEGE, GREAT PORTLAND STREET, W.

HOSPITAL STAFF.

Consulting Physicians.

B. W. RICHARDSON, M.A., M.D., F.R.S.
W. H. BROADBENT, M.D., F.R.C.P.

Consulting Surgeons.

PROFESSOR ERICHSEN, F.R.S. SIR SPENCER WELLS, Bart., F.R.C.S.
CHRISTOPHER HEATH, F.R.C.S.

Consulting Dental Surgeon—J. MERRYWEATHER, M.R.C.S.

Dental Surgeons.

Monday	F. HENRI WEISS, L.D.S.Eng.
Tuesday	ALFRED SMITH, L.D.S.Eng.
Wednesday	G. A. WILLIAMS, L.D.S.Eng.
Thursday	A. F. CANTON, L.D.S.Eng.
Friday	THOMAS GADDES, L.D.S.Eng. & Edin.
Saturday	HARRY ROSE, L.D.S.Eng.

Assistant Dental Surgeons.

Monday	WILLOUGHBY WEISS, L.D.S.Eng.
Tuesday	R. G. BRADSHAW, L.D.S.Eng.
Wednesday	MARCUS DAVIS, L.D.S.Eng.
Thursday	H. G. READ, L.D.S.Eng.
Friday	DENNIS CURNOCK, L.D.S.Eng.
Saturday	W. R. HUMBY, L.D.S.Eng.

House Surgeon—CHAS. GLASSINGTON, M.R.C.S., L.D.S.Eng.

LECTURERS.

<i>Dental Anatomy and Physiology ..</i>	THOMAS GADDES, L.D.S.Eng. & Edin.
<i>Dental Surgery and Pathology</i>	WILLOUGHBY WEISS, L.D.S.Eng.
<i>Dental Mechanics</i>	HARRY ROSE, L.D.S.Eng.
<i>Dental Metallurgy</i>	ALFRED TRIBE, F.C.S., Fell. Inst. Chem.
<i>Operative Dental Surgery</i>	W. ST. GEORGE ELLIOTT, M.D., D.D.S.
<i>Elements of Histology</i>	THOMAS GADDES, L.D.S.Eng. & Edin.
<i>Demonstrator of Dental Mechanics</i>	W. R. HUMBY, L.D.S.Eng.
<i>Arts and Literature</i>	Rev. Dr. H. R. BELCHER, M.A.

The hospital is open for the reception of patients every week-day from 9 o'clock till 11 o'clock a.m. The House Surgeon attends daily from 9 a.m. till 2 o'clock p.m.

Dresserships in the Extraction Room.—These appointments are held for three months by six senior and six junior students of the hospital. The respective dressers for each day are required to be in attendance from 9 o'clock till the conclusion of the practice; and they will be under the direction of the Dental Surgeons for the day and of the House Surgeon.

Clinical Lectures and Demonstrations.—Each medical officer will give clinical lectures, when opportune, during the ensuing year. Clinical lectures will also be given from time to time on cases of special interest; and also demonstrations upon the preparing and filling of cavities, and other operations upon the teeth and contiguous parts.

Attendance and Examination of Students.—A register is kept of the attendance of students at the hospital practice and lectures. An attendance of full two years at hospital practice is required by the College of Surgeons of England; and no schedule will be signed for any lectures of which less than two-thirds have been attended. Class examinations are held frequently during the several courses to test the progress and attention of the pupils; and at the end of each course of lectures a written examination is held. An insufficient attendance at lectures disqualifies the student for receiving any prize of that year.

Tutorial classes are held to prepare for the final examinations students who have, at this school, complied with the special Dental portion of the curriculum.

LECTURES.

WINTER SESSION, COMMENCING ON MONDAY, OCT. 1ST, 1883.

Dental Anatomy and Physiology, by Thomas Gaddes, L.D.S.Eng. and Edin. On Tuesdays and Thursdays at 7 p.m. during October, November, and December.

Operative Dental Surgery and Therapeutics, by W. St. George Elliott, M.D., D.D.S. On Wednesdays, at 7 o'clock p.m., during November and December. (Free to students of the hospital or college.)

Dental Metallurgy, by Alfred Tribe, F.C.S. On Tuesdays at 9 a.m. during January, February, and March.

Dental Mechanics, by Harry Rose, L.D.S.Eng. On Mondays at 7 p.m., during January, February, and March.

Demonstrations on Dental Mechanics, by W. Robinson Humby, L.D.S.Eng. On Wednesdays at 7 p.m., during January, February, and March. (Free to students of the college.)

SUMMER SESSION, 1884.

Dental Surgery and Pathology. On Mondays and Thursdays at 6 p.m. during May, June, and July.

Elements of Histology, by Thomas Gaddes, L.D.S.Eng. and Edin. On Wednesdays and Fridays at 7 p.m., during May and June. (Free to students of the college.)

Arts and Literature Class, conducted by the Rev. H. R. Belcher, LL.D., M.A.

The arrangements for this Class will vary according to the requirements of the Students entering.

FEES.

GENERAL FEE FOR SPECIAL LECTURES REQUIRED BY THE CURRICULUM OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.—£12 12s.

Fees to Single Courses.	One Course.	Two Courses.
Dental Anatomy and Physiology	£2 12 6	.. £4 4 0
Dental Surgery and Pathology	2 12 6	.. 4 4 0
Dental Mechanics	2 12 6	.. 4 4 0
Dental Metallurgy	3 3 0	.. 5 5 0
*Operative Dental Surgery	2 2 0	
*Elements of Histology	1 1 0	
*Demonstrations on Dental Mechanics	1 0 0	

Arts and Literature Class (three months), £3 3s. Hospital Practice to Registered Practitioners (six months), £7 7s. Ditto (twelve months) £9 9s.

Fee for the two years Hospital Practice required by the Curriculum, £12 12s.

Total Fee for the Special Lectures and Hospital Practice required by the Curriculum, £25 4s.

PRIZES.

Five Prizes, in Medals, are open for competition among the Students of the College at the end of each Course of Lectures on the following subjects, viz., Dental Anatomy, Dental Surgery, Dental Mechanics, Metallurgy, and Operative Dental Surgery.

Certificates of Honour will be awarded to those Students who show superior proficiency in any of the classes.

The Rymer Gold Medal for General Proficiency, value £5, will be awarded annually to the most distinguished Student of the year. His general conduct and attendance must have been in every respect satisfactory. At the time of the special examination for the Rymer Medal the Student must not hold any qualification. The Medal will be awarded on the understanding that the Student completes the Dental curriculum.

The Public Distribution of Prizes will take place at the commencement of the Summer Session.

THOMAS GADDES, *Dean*.

* These lectures are free to students of the college who have fully entered for the Special Lectures.

EDINBURGH.

DENTAL HOSPITAL AND SCHOOL.

Consulting Physician—ALEX. PEDDIE, M.D., F.R.C.P.E.

Consulting Surgeon—JOSEPH BELL, F.R.C.S.E.

Consulting Surgeon Dentist—DR. JOHN SMITH, F.R.C.S.E.

Dental Surgeons.

CHARLES MATTHEW, L.D.S. Edin.

WILLIAM BOWMAN MACLEOD, L.D.S. Edin.

MATTHEW FINLAYSON, L.D.S. Edin.

ANDREW WILSON, L.D.S. Edin.

GEORGE W. WATSON, L.D.S. Edin.

MALCOLM MACGREGOR, L.D.S. Edin.

Assistant Dental Surgeons.

EDWIN A. CORMACK, L.D.S. Edin.

J. STEWART DURWARD, L.D.S. Edin.

JAMES COOPER.

JAMES MACKINTOSH.

JAMES LINDSAY, L.D.S. Edin.

W. FORRESTER.

Honorary Treasurer and Dean.

WM. BOWMAN MACLEOD, L.D.S., 43, George Square.

DENTAL SCHOOL.

LECTURES.

Dental Anatomy and Physiology (Human and Comparative), by A. Wilson, L.D.S. (Edin.).—These Lectures will be delivered on the Evenings of Tuesday and Friday, at 8 o'clock, commencing on 6th November, 1883. The Course, consisting of twenty-four Lectures, will be illustrated by preparations, models, diagrams, microscopical specimens, &c.

Dental Surgery and Pathology, by George W. Watson, L.D.S. (Edin.).—These Lectures will be delivered on the Evenings of Tuesday and Friday, at 8 o'clock, during the Summer Session, commencing 3rd May, 1884. The Course, consisting of twenty Lectures, will be illustrated by preparations, models, diagrams, microscopical preparations, &c.

Mechanical Dentistry, by W. Bowman Macleod, L.D.S. (Edin.).—The Lectures will commence on 14th November, 1883, at 8 p.m., and be continued every Wednesday thereafter till the Course of at least twelve Lectures is concluded.

Practical Mechanics, Assistant Demonstrator, J. Stewart Durward, L.D.S. (Edin.).—In addition to the Systematic Lectures there will be given during the Session, Demonstrations on Dental Mechanics, and each Student will be expected to prepare the mouth, take the impression, make the denture, and insert the same in at least four cases. The Demonstrations will be spread over the two years of Hospital practice, and will be given as occasion serves. Students will require to furnish their own hand tools.

Gold Filling, by C. Matthew, L.D.S. (Edin.).—In this Class Senior Students will receive instruction in various methods of Gold Filling, &c. The Course, consisting of ten Demonstrations, will commence on the first Monday of May, 1884, at 8 a.m., and be continued every Monday and Thursday thereafter till the Course is completed.

In the various classes prizes will be offered for competition.

General Fee for the Hospital Practice and Special Lectures required by the Curriculum.—Hospital Practice, including one Course of Demonstrations in Gold Filling, £15 15s. One Course each of Dental Anatomy, Dental Surgery, and Mechanical Dentistry and Demonstrations, £9 15s.—£25 10s.

Fees to Separate Classes.—Dental Anatomy, Dental Surgery, Mechanical Dentistry, Gold Filling, £3 5s. each.

The Hospital Practice and Lectures qualify for the Dental Diplomas of the Royal College of Surgeons, Edinburgh, and also for that of the other Licensing Bodies. Second Courses of the Lectures, as required by the Royal College of Surgeons of England, £2 4s.

For further information apply to the Dean, who will be found at the Hospital every Wednesday morning between 9 and 10 o'clock.

THE SESSION 1883-4 OPENS NOVEMBER 1ST, 1883.

General Fee for the Hospital Practice and Special Lectures required by the Curriculum.

Hospital Practice, Two Years, including One Course of Demonstrations in Gold Filling	£15	15	0
One Course, of not less than 24 Lectures in Dental Anatomy..	}	9	15 0
" " 20 " Surgery ..			
" " 12 " Mechanics }			

Total..... £25 10 0

For further particulars, apply to the Dean, 30, Chambers Street, Edinburgh.

GLASGOW.

DENTAL HOSPITAL AND SCHOOL, ANDERSON'S COLLEGE.*

Hon. Consulting Physician—Professor CHARTERIS, M.D., &c.

Hon. Consulting Surgeon—Professor MORTON, M.D., &c.

Chloroformist—WILLIAM MUIR, M.B., C.M.

Dental Surgeons.

GEORGE BUCHANAN.

JAMES CUMMING, L.D.S.F.P.S.G.

W. S. WOODBURN, L.D.S.F.P.S.G.

JOHN FOULDS, L.D.S.F.P.S.G.

JOHN AUSTIN BIGGS.

J. R. BROWNIE, L.D.S., R.C.S. Eng.

DAVID TAYLOR, M.D., L.D.S.

Dental House Surgeon—A. B. YOUNG, L.D.S.

The Hospital is open daily, except Sunday, at 8 a.m., and patients are received till 10 o'clock. *Anæsthetics* administered, when required, at 9 a.m.

The work of the Hospital is conducted, as far as possible, by the Students, under the supervision of the Dental Officer of the day. Cases of special interest will be made the subject of clinical instruction or demonstration as they occur.

The practice of the Hospital may be entered upon at any time during the Session, and attendance dated therefrom. Fee for the two years' practice required by the curriculum, £10 10s. Fee for each course of Lectures, £2 2s.

The Dental Students' Society meets once a month in the Committee Room of the Hospital, when papers on subjects of interest are read and discussed by the Members.

DENTAL SCHOOL.

Secretary to the Dental Lecturers.—DAVID TAYLOR, M.D., L.D.S. Glasg.

Dental Anatomy and Physiology, Human and Comparative, by DAVID TAYLOR M.D., L.D.S., Glasg.

The Lectures will be delivered in the Summer Session, on the Mornings of Wednesday and Friday, at 8 a.m., and will be illustrated by Diagrams, Preparations, and Microscopic Specimens. Text-book—Tomes's Manual of Dental Anatomy, Human and Comparative.

Dental Surgery and Pathology, by JAMES RANKIN BROWNIE, L.D.S. Eng.

These Lectures are delivered on Tuesdays and Thursdays, during the months of May and June, at 8 a.m., and are be illustrated by recent Specimens, and other Preparations, and Drawings, &c. Text-Books—Tomes's Manual of Dental Surgery; Salter's Dental Pathology and Surgery; Harris's Principals and Practice of Dentistry.

Mechanical Dentistry, by W. S. WOODBURN, L.D.S. Glasg.

This Course will commence on the first Thursday of October, at 8 o'clock p.m., and will consist of 12 Lectures, with Practical Demonstrations in the Dental Laboratory.

All communications on matters relating to the Dental School school should be addressed to MR. DAVID TAYLOR, 144, Wellington Street, Glasgow, who will forward detailed Prospectus of the School.

* Corrections not having been received from this Hospital or College its accuracy cannot be guaranteed.—ED.

DUBLIN.

DENTAL HOSPITAL AND SCHOOL OF DENTAL SURGERY,

BERRESFORD PLACE.

Consulting Physicians.

THOMAS HAYDEN, F.K.Q.C.P.I. | GEORGE F. DUFFEY, F.K.Q.C.P.I.

Consulting Surgeons.

EDWARD D. MAPOTHER, M.D. | HENRY GRAY CROLY, F.R.C.S.I.

Dental Surgeons.

G. M. P. MURRAY, L.R.C.S.I. | HENRY SHERLOCK, F.R.C.S.I.

J. H. LONGFORD, L.D.S.R.C.S.I. | F. TAYLOR, L.D.S.I.

Hon. Treasurer—J. H. LONGFORD.*Hon. Secretary*—H. G. SHERLOCK, F.R.C.S.I.

This Hospital is visited daily at 9.30; practical instruction is given in all branches of Dental Surgery, and Clinical Lectures are delivered in conformity with the Curriculum of the Royal College of Surgeons of Ireland. The Fee is £3 3s. for one Session, and £5 5s. for two.

BIRMINGHAM.

BIRMINGHAM SCHOOL OF DENTISTRY, QUEEN'S COLLEGE.*

The teaching of Dentistry is now undertaken by the Queen's College, acting in association with the Birmingham Dental Hospital and the Birmingham Clinical Board, so that students may fully qualify themselves for the Dental Diploma of the Royal Colleges.

The Dental Hospital is situated near the College, and is open daily (Sundays excepted). The number of patients treated there during the year 1881 was upwards of 7000.

The General and Queen's Hospitals offer every advantage for the study of General Surgery and Medicine, the arrangements for which are carried out under the direction of the Birmingham Clinical Board.

The Regulations relating to the Diploma in Dental Surgery of the Royal College of Surgeons of England may be obtained on application to the Warden.

LECTURES FOR THE DENTAL CURRICULUM.

WINTER SESSION.

Special Subjects.

Dental Anatomy and Physiology.—F. ROBERT BATCHELOR, L.D.S.I., Dental Surgeon to the Dental Hospital. Thursdays, at 5 p.m.

Dental Surgery and Pathology.—THOMAS HOWKINS, M.R.C.S. Fridays, at 5 p.m.

Dental Metallurgy.—W. A. TILDEN, D.Sc., F.R.S. N.B.—This Class will be held at Mason's College. About ten lectures on this subject will be given in the course of the Winter Session, due notice of which will be given

General Subjects.

Anatomy, Practical Anatomy, Physiology, Chemistry, Medicine, Surgery. These Classes are similar to those in the Medical Department.

SUMMER SESSION.

Special Subject.

Dental Mechanics.—CHARLES SIMS, L.D.S.E., Senior Dental Surgeon to the Dental and Queen's Hospitals. Wednesdays, at 5 p.m.

General Subjects.

Materia Medica and Therapeutics. Practical Chemistry.—These Classes are similar to those in the Medical Department.

* Corrections not having been received from this College its accuracy cannot be guaranteed.—Ed.

FEES.

A Composition Fee of 75 guineas, payable in one sum, or in two sums, viz.: 50 guineas at the beginning of the first year, and 25 guineas at the beginning of the second year, of studentship, admits to the full curriculum required for the Dental Diploma (inclusive of the necessary Hospital Practice.)

N.B.—Further particulars may be obtained on application to the Warden at the College, or to Mr. Charles Sims, at 51, Union Passage, Birmingham.

DENTAL HOSPITAL,* NEWHALL STREET.

Open daily at 9 a.m.

Consulting Physician—JAMES SAWYER, M.D. Lond, M.R.C.P., Senior Physician to the Queen's Hospital.

Consulting Surgeon—JAMES F. WEST, F.R.C.S., Senior Surgeon to the Queen's Hospital.

Consulting Dentists.

THOMAS R. ENGLISH.

| ADAMS PARKER, L.D.S., R.C.S.E.

Administrators of Anæsthetics.

F. H. MABERLEY, M.R.C.S., L.R.C.P.E. | J. W. MOORE, M.R.C.S.

Dental Surgeons.

Days of Attendance.

CHARLES SIMS, L.D.S., R.C.S. Eng. Wednesdays.

H. BREWARD NEALE, L.D.S., R.C.S.I. Thursdays.

F. R. BATCHELOR, L.D.S., R.C.S.I. Mondays and Fridays.

F. E. HUXLEY, M.R.C.S., L.D.S. Tuesdays and Saturdays.

Hon. Secretary to the Surgical Committee. H. BREWARD NEALE.

DEMONSTRATIONS.

Clinical Demonstrations will be given from time to time by the Staff on cases of particular interest; also upon the Preparing and Filling of Cavities, and other operations upon the teeth and contiguous structures.

DRESSERSHIPS IN THE EXTRACTION ROOM.

These appointments are held for three months by senior and junior Students of the Hospital. The respective dressers for each day are required to be in attendance from 9 o'clock till the conclusion of the practice; and they will be under the direction of the Dental Surgeon in attendance.

The Fees are as follows:

Composition Fee for the whole of the Lectures and Hospital Practice, Special and General, required for L.D.S. Diploma, 75 guineas.

Dental Hospital Practice:

If taken separately, 2 years £14 14 0

" " 1 year 8 8 0

" " 6 months. 5 5 0

For further information connected with the School apply to the Dental Secretary, H. BREWARD NEALE, Esq., Newhall Street, with whom Students are required to register their names for Hospital Practice.

MANCHESTER.

THE MANCHESTER DENTAL HOSPITAL,

98, GROSVENOR STREET, C.-ON-M.

The Hospital was opened to the Public on the 23rd July last, and has already proved very beneficial to the poorer classes; over one hundred operations having been already performed.

96, Bloomsbury.

THOMAS NORTH, *Hon. Sec.*

President—Rt. Hon. Earl of CRAWFORD and BALCARRES, LL.D., F.R.S.,
Haigh Hall, Lancashire.

* Corrections not having been received from this Hospital its accuracy cannot be guaranteed.—Ed.

Vice-Presidents.

W. H. HIGGIN, Esq., Q.C., Chairman of the Preston and Salford Quarter Sessions.
 RICHARD HAWORTH, Esq., J.P.
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 Major W. O. POOLEY, J.P.
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Rev. Dr. BURTON, Chairman.

Rev. Canon BIRLEY, M.A.
 Rev. J. B. M'GOVERN.
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 T. TAYLOR, Esq., F.R.C.V.S.
 GEO. HUNT, Esq.

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 THOS. COLLINS, Esq.
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 JOSH. KERSHAW, Esq.
 H. SWINDELLS, Esq.

Treasurer—F. W. TRAVERS, Esq., National Provincial Bank of England.

Auditor—JOHN DAWSON, Esq., F.C.A.

Honorary Secretary—Mr. THOMAS NORTH, 96, Bloomsbury, Oxford Road.

Consulting Physician—D. LLOYD ROBERTS, M.D., F.R.S.E., F.R.C.P. Lond.

Consulting Surgeon—JAMES HARDIE, M.D., F.R.C.S.

Administrator of Anæsthetics—J. J. KENT FAIRCLOUGH, M.D., M.R.C.S.

Consulting Dental Surgeons.

JONATHAN HOOTON, L.D.S.

FRANK A. HUET, L.D.S.

Dental Surgeons.

Monday—H. C. SMALE, L.D.S.

Thursday—GEO. CROCKER, L.D.S.

Tuesday—W. SMITHARD, L.D.S.

Friday—

Wednesday—R. WALKER, L.D.S.

Saturday—A. C. FARNSWORTH, L.D.S.

Hours of Hospital Attendance.—The hours of Hospital attendance shall be from 8.30 to 10 a.m. daily, Sundays excepted; and the Hospital shall be open to the visits of all Dental Surgeons holding diplomas.

DENTAL SCHOOL.

LECTURERS.

On "Dental Surgery and Pathology," by

On "Dental Anatomy and Physiology," by

On "Operative Dental Surgery," by A. C. FARNSWORTH, L.D.S.

On "Dental Mechanics," by FRANK A. HUET, L.D.S.

On "Dental Metallurgy," by H. C. SMALE, L.D.S.

Fee to Lectures, one course, £8 8s.

Fee to Lectures, double course, £14 14s. (required for Diploma).

Fee to Dental Practice at Hospital, £5 5s. per annum.

Fee to entire Dental Curriculum (required for Diploma), 24 guineas.

Further information may be obtained from the Honorary Secretary, Mr. THOS. NORTH, 96, Bloomsbury, C.-on-M., Manchester.

LIVERPOOL.

DENTAL HOSPITAL, MOUNT PLEASANT.

Consulting Physician—THOMAS ROBINSON GLYNN, M.D., M.R.C.P. Lond., &c.

Consulting Surgeon—W. MITCHELL BANKS, M.D., F.R.C.S.

Consulting Dental Surgeons.

W. J. NEWMAN, L.D.S.I.

R. F. STEWART, L.D.S. Eng.

Dental Surgeons.

THOMAS F. AUSTIN.	J. G. ROBERTS, L.D.S.I.
WILLIAM T. BRYAN.	D. DOPSON, L.D.S.I.
W. H. WAITE, D.D.S., L.D.S.I.	J. N. P. NEWTON, L.D.S. Eng, D.D.S.

Assistant Dental Surgeons.

CHAS. T. STEWART.	E. A. COUNCELL, L.D.S. Eng.
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This Hospital is a School of Practical Dental Surgery duly recognised by the Royal College of Surgeons and open to all Students of Dentistry, under such regulations as shall be determined by the Committee of Management.

The Hospital is open daily for admission of patients from 8.30 till 10 a.m. and from 6 to 7 p.m.

Fees for Hospital practice £5 5s. per annum to students of the Liverpool Royal Infirmary School of Medicine and pupils or apprentices of registered Dentists.

Further information may be obtained by applying to the Honorary Secretary, W. L. Jackson, c, Queen Insurance Buildings, 10, Dale Street.

PLYMOUTH.

DENTAL DISPENSARY,* OCTAGON.

Physician—C. ALBERT HINGSTON, M.D. Lond.

Surgeons.

CHRISTOPHER BULTEEL, F.R.C.S.	CONNELL WHIPPLE, M.R.C.S.
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Consulting Dentists.

STRATTON J. COLES.	F. A. JEWERS.
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Dental Surgeons.

W. V. MOORE, D.L.R.C.S.E.	FRANCIS H. BALKWILL, D.L.R.C.S.E.
C. SPENCE BATE, F.R.S., D.L.R.C.S.E., &c.	ERNEST E. JEWERS, L.D.S. Eng. ALFRED GEORGE HAMBLY, L.D.S.I.

Treasurer—ALFRED PAYNE BALKWILL.

The Dentists attend each day at 9 a.m. except Sundays and Saturdays.

DENTAL SCHOOL.

Certificates of attendance on the practice of this Dental Dispensary are recognized by the College of Surgeons as qualifying for the Diploma in Dental Surgery. The College also recognizes the lectures delivered at the Dispensary. Pupils of any of the Dental Surgeons of the Plymouth Dental Dispensary, or other Dentists holding a Diploma of the College of Surgeons, or Member of the Odontological Society, may attend the Dispensary on the day of such practitioner as may agree to accept such pupil or pupils, on the payment of £1 1s. per annum to the institution.

LECTURES.

On "Dental Physiology," by C. SPENCE BATE, F.R.S., L.D.S., R.C.S.E.

On "Dental Anatomy," by F. H. BALKWILL, L.D.S., R.C.S.E.

On "Dental Mechanics," by W. V. MOORE, L.D.S., R.C.S.E.

Fee to Lectures, one Course, £7 7s.

Fee to Lectures, double Course, £12 12s. (required for Diploma).

Fee to Dental Practice at Dispensary, £5 5s. per annum.

Fee to entire Dental Curriculum (required for Diploma), 22 Guineas.

Further information may be obtained from the Secretary, E. G. BENNETT, Esq., at above address.

* Corrections not having been received from this Dispensary accuracy cannot be guaranteed.—Ed.

EXETER.

DENTAL HOSPITAL.

Consulting Surgeons.

A. J. CUMMING, F.R.C.S.Eng. — WILLIAM CLAPP, F.R.C.S.Eng.
Surgeon Administrator of Anæsthetics—W. A. BUDD, M.R.C.S.Eng.

Dental Surgeons.

J. T. BROWNE-MASON, L.D.S.Eng.	C. NORMAN KING, L.D.S.I.
S. BEVAN FOX, L.D.S.Eng.	T. G. T. GARLAND, L.D.S.I.
HENRY BIGING MASON, L.D.S.Eng.	J. MC. KNO. ACKLAND, L.D.S.Eng.

Honorary Secretary—HENRY B. MASON.

Attendance on the practice of this hospital is recognized by the Royal College of Surgeons of England as qualifying for their Dental diploma.

The hospital is open daily (Sundays excepted), and patients are admitted between the hours of 9 and 11 a.m.

Pupils of any member of the staff, or other registered practitioner (being a Life or Annual Governor), are permitted to attend the practice of the hospital, subject to the approval of the Medical Sub-Committee, on payment of Five Guineas annually to the funds of the Institution. Students attending the practice of the Hospital must consider themselves strictly under the control of the Medical Officers, and must not undertake any operation without the consent of the Dental Surgeon for the day.

Number of cases treated in 1882, 6251.

PRIVATE SCHOOL OF ANATOMY, PHYSIOLOGY, AND SURGERY.

Demonstrations and lectures by Mr. Thomas Cooke, F.R.C.S., senior assistant surgeon to the Westminster Hospital.

This school of anatomy, physiology, and surgery meets the requirements of two distinct classes of students, *i.e.*—1. Advanced students and qualified practitioners, who may wish either to extend their knowledge of the foregoing subjects, or to recall to mind what they once knew and have since forgotten; 2. Beginners entering upon their medical duties by a short term of apprenticeship with a general practitioner. For the former, rapid advanced classes, complete in three months, but still thoroughly practical, are provided; and for the latter, more elementary classes of six months' duration, also thoroughly practical.

The operations of surgery are all performed on the dead body by the students.

The dissecting-room is open daily from 10 a.m. to 6 p.m. The demonstrators attend four hours daily.

Fees.—Anatomy and physiology: For primary membership examination of royal college of surgeons, three months, £4 4s.; six months, £5 5s. For primary fellowship examination (with comparative anatomy), six months, £5 5s. Surgery: For second membership examination of royal college of surgeons, three months, £5 5s.; six months, £8 8s.; for second fellowship examination, six months, £8 8s. (See Advertisement.)

GENERAL HOSPITALS.

CHARING CROSS HOSPITAL.

Dental Surgeon—J. Fairbank, M.R.C.S., who attends at the Hospital three days a week for Dental operations. A course of Lectures on Dental Surgery is also given during January, February, and March.

The fee at this hospital for the L.D.S. Course is £42 2s., which may be paid in two instalments; this includes the matriculation fee of £2 2s., for

which the student enjoys all the privileges of a matriculated student, which are as follows :

1st. They pay a proportionately lower amount of fees.

2nd. They alone are eligible for the following offices and appointments :—Resident medical officer, resident surgical officer, resident accoucheur, assistant demonstrator, pathological assistant, clinical clerks, dressers, dentist's assistant.

3rd. They are admitted to the use of the library and reading rooms.

4th. They are admitted, without additional fee, to the clinical and pathological demonstrations, and enjoy other advantages.

5th. They alone are entitled to compete for the scholarships.

Two prizes are awarded annually in the class of lectures on Dental Surgery, of the value of six guineas and four guineas respectively.

Students may serve as assistants to the Dental Surgeon for a period of three months.

The attention of Dental students is drawn to the re-arrangements which have been made in the hours of lectures, so as to enable students to attend the practice at the Dental hospital.

For further information apply to the Dean, Dr. J. Mitchell Bruce, or to the Secretary, who attends daily at the office of the Medical School, Chandos Street, Charing Cross, between the hours of 10 and 4.

KING'S COLLEGE, STRAND, W.C.

No special arrangements are made for Dental Students.

LONDON HOSPITAL MEDICAL COLLEGE.

Dental Surgeon—Ashley Barrett, M.B. Lond., M.R.C.S.

The Council of the College of Surgeons recognise the Dental Department of the London Hospital as a school at which may be obtained the Dental Practice necessary to qualify a student for the Examination for the Dental Diploma. Dental students may obtain the General Medical Education (that is, apart from certain Special Lectures to be attended at a Dental School) and the Dental Practice, necessary for the Diploma, at the London Hospital School on payment of 40 guineas.

A course of Lectures on the Anatomy and Pathology of the Teeth, and Dental Surgery, will be delivered by Mr. Ashley Barrett on days which will be duly announced. It comprises the Form and Arrangement of the Dental Organs; Structure of the Human Tooth; its mode of development; Abnormalities and Irregularities of the Teeth; with the mode of treating the latter; Dental Caries, and its treatment; Periodontitis, its cause and treatment. Mr. Barrett gives practical instruction on Tuesdays at 9 a.m., which is open to all students of the School and Hospital, and can be attended by gentlemen who are not pupils, on payment of a fee of 10 guineas.

A *Dental Assistant* is elected every three months, without any additional expense. The terms of office date from the first Tuesday in January, April, July, and October. In selecting Candidates priority will be given to those who have attended the greatest number of Lectures on Dental Pathology and Surgery, and have also been the most punctual in attendance in the Dental Department on Tuesday mornings.

Further information may be obtained on application to Mr. Munro Scott, the Warden, Medical College, London Hospital.

MIDDLESEX HOSPITAL.

Consulting Dental Surgeons—J. Tomes, F.R.S., M.R.C.S., L.D.S., and J. S. Turner, M.R.C.S., L.D.S.

Dental Surgeon—Claude Rogers, D.M.D., M.R.C.S., L.D.S.

Assistant Dental Surgeon—W. Storer Bennett, F.R.C.S., L.R.C.P., L.D.S.

Students who intend to become Licentiates in Dental Surgery of the Royal College of Surgeons are admitted to attend the requisite courses of Lectures and Hospital Practice on payment of a fee of 40 guineas, in one payment, or by instalments of £30 on entrance, and £15 at the beginning of the second Winter Session.

A short course of Lectures on Dental Surgery will be delivered during November and December by the Lecturer on Dental Surgery, Mr. Storer Bennett. The Lectures will be supplemented by practical demonstrations, which will be given every week during the Winter and Summer Sessions by the Dental Surgeon and Assistant Dental Surgeon. Students of the hospital free, others pay a fee of 5 guineas.

Further information may be obtained from Andrew Clarke, Esq., the Dean, or from the Resident Medical Officer at the hospital.

ST. GEORGE'S HOSPITAL.

Dental Surgeon—A. Winterbottom, F.R.C.S., L.D.S.

Mr. Winterbottom attends at the hospital on Tuesdays and Saturdays at 9 a.m.

A course of Lectures on Dental Surgery is given by Mr. Winterbottom in the Summer Session. Free to students of the hospital.

Fee for general subjects in Dental Surgery, including Practical Chemistry, £55. Payable in two instalments: first year, £30; second year £25.

Further information can be obtained by application to Dr. Wadham, Dean of the Medical School.

GUY'S HOSPITAL MEDICAL AND SURGICAL SCHOOL.

Dental Surgeon—H. Moon, M.R.C.S., L.D.S.

Dressers are appointed to the Dental Surgeon, and hold office for two months, each receiving special certificates.

Practical instruction in Dental Surgery is given every Tuesday at 1.30 and Thursday at 12.30 o'clock. A certain number of cases of cleft palate, perforate palate, irregularities, lost portions of jaw, &c., are constantly under treatment for the instruction of students, the necessary apparatus being supplied at the expense of the hospital.

A course of Lectures on Dental Surgery is delivered during the Summer Session, and special instruction is given on this subject in the Surgery, by Mr. Moon, throughout the year.

Application respecting the School may be made to the Dean, Dr. F. Taylor.

ST. BARTHOLOMEW'S HOSPITAL AND COLLEGE.

Dental Surgeon and Lecturer—Alfred Coleman, F.R.C.S., L.D.S. Eng.

Assistant Dental Surgeons—Isidore J. Lyons, M.R.C.S., L.D.S., and Francis Ewbank, M.R.C.S., L.S.A.

The Dental Department of the hospital is open on Tuesday and Friday mornings at 9 o'clock. The practice of the department is recognised by the Royal College of Surgeons.

Lectures on Dental Surgery, Anatomy, Physiology, and Pathology, on Saturdays, at 10.30 a.m., during the months of October, November, and December; the fee for one course is £2 12s. 6d., unlimited £4 4s. These Lectures are recognised by the Royal College of Surgeons as a course of Dental Surgery required for the Dental Diploma.

The fee for general subjects for Dental students for the first winter is £33 2s. 6d., for the first summer £33 2s. 6d., or a single payment of £66 3s.

This hospital is the oldest and one of the largest in London, and among many other advantages which it offers the student is that provision is made for their residence in the College, on the recommendation of a medical officer of the hospital. For the terms of board and residence and all other information regarding the College, application should be made either personally, or by letter, to the Warden of the College, Dr. Moore.

ST. MARY'S HOSPITAL MEDICAL SCHOOL.

Dental Surgeon—H. Howard Hayward, M.R.C.S., L.D.S.

Practical instruction in Dental operations is given on Wednesdays and Saturdays at 9.30 a.m. Dressers are appointed who hold office for three months. Also a special course of Lectures on Dental Surgery.

Fee for the course, £2 12s. 6d.

Further information may be obtained by application to George Field, Esq., M.R.C.S., Dean of the School. (See Advertisement.)

ST. THOMAS'S HOSPITAL.

Dental Surgeon—William Gill Ranger, M.R.C.S.

Assistant Dental Surgeon—Charles Edwin Truman, M.R.C.S., L.D.S.

Gentlemen may receive instruction in diseases of the teeth, are appointed dressers, and can undertake operations, subject to the supervision of the Dental Surgeons, Tuesdays and Fridays at 10 a.m.

Numerous cases of irregularity of the teeth, stoppings, and the application of artificial appliances are undertaken during the term.

The fee for attendance on the *general* subjects required of the students in Dental Surgery is for the two years £55, or by instalments, £50 for the first year, and £10 for the second year.

Dental practice, one year, two guineas; perpetual, three guineas.

For further information apply to G. Rendle, Esq., M.R.C.S., Medical Secretary.

WESTMINSTER HOSPITAL.

Dental Surgeons—J. Walker, M.D., M.R.C.S., L.D.S., and A. Morton Smale, M.R.C.S., L.D.S.

Dr. Walker attends at 9.15 a.m. on Wednesdays, and Mr. Morton Smale on Saturdays at 9.15 a.m., for practical demonstration of diseases and operations on the teeth.

The fee for attendance on the Dental Practice is £2 2s. for three months, and £3 3s. for six months. The whole of the General Lectures and Surgical Practice required for the Dental Diploma of the College of Surgeons can be attended for £50, in one sum, on entrance, or for two sums of £32 10s. and £20, payable at the beginning of each year.

Dr. Walker will deliver a course of Lectures on Dental Surgery and Pathology on Wednesdays, in October, November, and December, at 9.30 a.m.

Classes in Metallurgy in its application to Dental purposes, Dental Anatomy and Physiology, and in Dental Mechanics, will be formed should a sufficient number of students give in their names.

The Calendar will be forwarded on application to Dr. de Havilland Hall, Dean of the School, who will afford every information.

DENNIS COLLEGE, MANCHESTER.

No special arrangements for Dental Students. Fees £60 14s. 6d.

SCHOOL OF MEDICINE, SURGEON'S HALL, EDINBURGH.

The fees required for students attending general subjects necessary for the curriculum of the Royal College of Surgeons, Edinburgh, are £38 10s.

HARVARD UNIVERSITY, DENTAL DEPARTMENT, BOSTON, MASS., U.S.A.

THE Sessions of this School begin the last Thursday in September, and end the last Wednesday in June, making nine months of practically continuous work in each year.

General Anatomy with Dissections, Physiology, and General Chemistry, are the Studies of the first year. Of the second year they are Operative and Mechanical Dentistry, Dental Materia Medica and Therapeutics, Oral Surgery and Surgical Pathology. The Student can also attend gratuitously all the lectures in any other department of the University.

The Infirmary of the Massachusetts Hospital furnishes abundant facilities, averaging 8000 operations, of which a large proportion consists of filling teeth, every year.

The University degree, D.M.D. (Dentariæ Medicinæ Doctor) is conferred on all who fulfil the requirements.

The diploma is recognised by the English Medical Council.

For the first year a Student is a member of the school the fee is 200 dols., for the second year 150 dols., and for any subsequent year 50 dols.

For further information and catalogues, address, Thomas H. Chandler, Dean, 74, Commonwealth Avenue, Boston, Mass., U.S.A.

THE DENTAL COLLEGE OF THE UNIVERSITY OF MICHIGAN.

The Ninth Annual Session of this Institution will commence on the 1st of October, and close on the last Wednesday of March, thus making a course of six months. A preliminary examination, having reference to general educational attainments, is required.

The students in this department will receive instructions in Anatomy, Physiology, Pathology, Chemistry, Materia Medica, Therapeutics, and Surgery, from the Professors of their

respective branches in the *Department of Medicine and Surgery* of the University, when lectures commence, and continue the same as with the Dental College.

FACULTY OF THE DENTAL DEPARTMENT.

J. B. ANGELL, LL.D.	-	-	-	-	President.
J. TAFT, M.D., D.D.S.	-	-	-	-	Principles and Practice of Operative Dentistry.
CORYDON L. FORD, M.D., D.D.S.	-	-	-	-	Anatomy and Physiology.
J. A. WATLING, D.D.S.	-	-	-	-	Clinical and Mechanical Dentistry.
W. H. DORRANCE, D.D.S.	-	-	-	-	Prosthetic Dentistry.
U. D. BILLMEYER, D.D.S.	-	-	-	-	Demonstrator of Clinical Dentistry.
C. S. CASE, D.D.S.	-	-	-	-	Demonstrator of Prosthetic Dentistry.

Special instruction will be given in Dental Pathology, Oral Surgery, Dental Therapeutics, and Diseases of Women and Children, with reference to the teeth.

Students should be promptly present at the College on Friday, September 28th, at 10 o'clock a.m., to make the preliminary arrangements for entering upon regular work.

CONDITIONS OF GRADUATION.

The candidate must be twenty-one years of age. *He must furnish evidence of good moral character.*

He must devote three years to the study of his profession. He must attend two full courses of lectures in the Dental College, or one course in some college having an equal standard of requirements, and the last one here, and we recommend that he attend three courses regularly.

He must sustain an examination satisfactory to the Faculty in all the branches taught.

FEES AND EXPENSES.

The fees, which must be paid in advance, are as follows:

RESIDENTS OF MICHIGAN.—Matriculation Fee, Dols. 10.00; annual dues, Dols. 25.00.

NON-RESIDENTS.—Matriculation, Dols. 25.00; annual dues, Dols. 35.00.

GRADUATION FEE.—For all alike, Dols. 10.00. The admission fee is paid but once, and entitles the student to the privileges of permanent membership in any department of the University. The annual due is paid the first year and every year thereafter while at the University.

For further particulars, address the Dean of the Dental College, Ann Arbor, Mich.—J. Taft, Dean.

IV.—SCIENTIFIC ASSOCIATIONS.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

President—DR. J. WALKER.

Vice-Presidents.

RESIDENT.

T. C. WHITE.
CHARLES S. TOMES.
HENRY MOORE.

NON-RESIDENT.

J. T. BROWNE-MASON, (Liverpool).
WALTER CAMPBELL (Dundee).
WILLIAM DOHERTY (Dublin).

Treasurer—JAMES PARKINSON.

Librarian—FELIX WEISS.

Curator—S. J. HUTCHINSON.

Honorary Secretaries.

J. HOWARD MUMMERY (for Foreign
Correspondence).

C. ROGERS (Council).
T. F. KEN UNDERWOOD (Society).

Councillors.

Resident.—ALFRED COLEMAN; F. CANTON; J. STOCKTEN; I. I. LYONS; G. A. IBBETSON; A. GIBBINGS; T. A. ROGERS; J. S. TURNER; A. CARTWRIGHT.

Non-resident.—WILLIAM FOTHERGILL (Darlington); MARTIN MAGOR (Penzance); R. ROGERS (Cheltenham); W. HELE (Carlisle); A. WILSON (Edinburgh); F. WHITE (Norwich).

EXTRACTS FROM THE BYE-LAWS.

Objects and Constitution of the Society.

This Society is instituted for the encouragement and diffusion of knowledge in Dental Surgery, and for the promotion of intercourse among members of the Dental Profession.

The Society shall consist of resident, non-resident, corresponding, and honorary members.*

* The following bye-law came into force last year:

"That on and after November 1st, 1882, candidates for the Resident, Non-Resident, or Corresponding Membership of the Society shall not be eligible unless they practise as Dental Surgeons, or are interested in the progress of

1. The resident members shall consist of gentlemen practising as Dental Surgeons in London, or within ten miles of General Post Office, St. Martin's-le-Grand.
2. The non-resident members shall consist of gentlemen practising as Dental Surgeons residing beyond ten miles from London
3. The corresponding members shall consist of distinguished gentlemen practising as Dental Surgeons, residing in the Colonies of Great Britain or foreign countries.
4. The honorary members shall consist of distinguished practitioners of Dental Surgery who have retired from practice, of distinguished medical practitioners, and of gentlemen distinguished in any department of science.

Persons who advertise in the public journals or by circular, either their profession or their professional attainments or public appointments, or anything relating to their mode of practice or charges, or who expose for public inspection specimens of operative or mechanical Dentistry, or conduct their practice in any way which in the opinion of the Council of this Society is derogatory to the respectability of the profession, shall not be considered eligible for nomination as members.

No person being the proprietor of a secret remedy, or holding a patent relating to the requirements of Dental practice shall be a member of this Society.

Election and admission of Resident and Non-Resident Members.

Recommendations for resident members shall be signed by two members from personal knowledge, and by two or more from general knowledge. Recommendations for non-resident members may be signed by one member only from personal knowledge and by two or more from general knowledge.

All recommendations for resident or non-resident members shall be submitted to and approved of by the Council before being proposed to the Society for ballot.

Contributions of Members.

Every person elected a resident member shall pay three guineas as an admission fee, and an annual subscription of two guineas, *in advance*.

Every person elected a non-resident member shall pay two guineas as an admission fee, and an annual subscription of one guinea, *in advance*.

The entrance fees and first annual subscription shall be paid on admission, and the subsequent annual subscriptions in the month of November in each year; but new members, proposed at or after the annual meeting, shall not be required to pay any subscription for the current session.

Ordinary Meetings.

The ordinary meetings of the Society shall be held on the first Monday in each month, from November to June, both inclusive, at 8 p.m. precisely, except in the month of January.

Each member may introduce two visitors at these meetings, on writing the visitors' names in a book to be kept for that purpose. The same visitors shall not be admitted more than three times during one session.

Annual General Meeting.

The annual general meeting of the Society for the election of the officers and councillors, &c., shall be held on the evening of the second Monday in January every year.

Society's Transactions.

The Transactions of the Society, under the designation of 'Transactions of the Odontological Society of Great Britain,' shall be printed at such times and in such manner as the Council shall direct.

The 'Transactions' shall be presented to all resident and non-resident members of the Society, who have paid their annual subscriptions.

Dental Surgery, and are also Licentiates in Dental Surgery, or qualified Practitioners of Medicine or Surgery; or possess such a Diploma or Degree as in the opinion of the Council will qualify them for the Membership of the Society."

ODONTO-CHIRURGICAL SOCIETY OF SCOTLAND,

23, CASTLE STREET, EDINBURGH.

President—ANDREW WILSON, L.D.S.Edin.*Vice-Presidents.*

W. B. MACLEOD, L.D.S.Edin. | JOSEPH HARRISON, L.D.S.Edin.

Treasurer—MALCOLM MACGREGOR, L.D.S.Edin.*Secretary*—MATTHEW FINLAYSON, L.D.S.Edin.*Curator and Librarian*—G. W. WATSON, L.D.S.Edin.*Council.*

Dr. JOHN SMITH.

J. A. BIGGS, Glasgow.

Dr. W. H. WILLIAMSON, L.D.S., Aberdeen.

JOHN MOORE LIPSCOMB, L.D.S. Eng., Kilmarnock.

Ordinary Meetings.—The Society meets on the second Thursdays of November, December, January, and February, and the 13th March.

EXTRACTS FROM THE CONSTITUTION AND LAWS.

Name and Objects.

The Society shall be named the "Odonto-Chirurgical Society," and shall have for its objects the Promotion and Diffusion of Knowledge in matters connected with Dental Surgery; the furtherance of communications on such subjects by Members of the Society; and otherwise to advance the interests of Dental Surgery as a branch of medicine.

Ordinary and Honorary Members.

The Society shall consist of Ordinary, Honorary, and Corresponding Members:

The Ordinary Members shall consist of Gentlemen practising as Dentists in Great Britain, and of Medical and Surgical Practitioners interested in Dental Surgery.

The Honorary and Corresponding Members shall consist of Gentlemen practising Dentistry in Great Britain, in the Colonies, or in Foreign Countries, and of retired Dental Practitioners in Britain, as well as such Medical or generally Scientific men as may have distinguished themselves in connection with Dental Surgery.

The Ordinary Members shall have vested in them the Government of the Society, and all cases not otherwise specified shall be decided by them by a majority of votes, by ballot, if required.

Obligations of Members.

No Members shall be permitted to advertise his profession, his modes of practice, or his charges, either in the public journals or by circular. They shall not be permitted to expose specimens of their work for public inspection, nor to carry on their practice in connection with any other business, nor to hold any patent relating to Dental practice, nor to conduct themselves in any way which the Society may consider derogatory to the Profession, so long as they continue Members of the Society. But Members who practice in towns other than that in which they reside shall be allowed to intimate their visits; such intimations being subject to the approval of the Council.

Application for Membership.

Candidates for admission as Members of the Society shall be recommended by an Ordinary Member, and the recommendation seconded by another. After being approved by the Council, such recommendation shall be read to the Society at an Ordinary Meeting, and shall lie over till the next, when the Candidate shall be balloted for, when two thirds of the Members present must be in his favour to secure his election.

Contributions.

Ordinary Members residing within a ten mile radius of the city shall pay an Entrance Fee of One Guinea, and one Guinea of an Annual Subscription, in advance. All other Ordinary Members shall pay an Entrance Fee of One Guinea, and Ten Shillings and Sixpence of an Annual Subscription. All Annual Subscriptions to date from the 1st of March preceding the Candidate's admission.

ASSOCIATION OF SURGEONS PRACTISING DENTAL SURGERY,

11, CHANDOS STREET, CAVENDISH SQUARE.

President—SAMUEL CARTWRIGHT.*Vice-Presidents.*

J. A. BAKER.

THOMAS EDGELOW.

FRANCIS BRODIE IMLACH.

S. J. A. SALTER, F.R.S.

Treasurer—S. HAMILTON CARTWRIGHT.*Hon. Secretary*—J. HAMILTON CRAIGIE.*Council.*

EDWARD BARTLETT.

T. W. W. FAY, Liverpool.

F. FOX.

PETER ORPHOOT, M.D., Edinburgh.

W. G. RANGER.

AUGUSTUS WINTERBOTTOM.

As the name implies, only those possessed of a registrable Medical or Surgical qualification are eligible for the Fellowship of this Society.

THE BRITISH DENTAL ASSOCIATION.

President—C. SPENCE BATE, F.R.S., L.D.S.Eng.*President-Elect*—Dr. J. SMITH, F.R.C.S.Eng.*Chairman of Representative Board*—JOHN TOMES, F.R.S., M.R.C.S., L.D.S.Eng.*Vice-President*—J. SMITH TURNER, M.R.C.S., L.D.S.Eng.*Vice-Chairman of Representative Board*—A. J. WOODHOUSE, L.D.S.Eng.*Treasurer*—JAMES PARKINSON, L.D.S.Eng.*Hon. Sec.*—F. CANTON, M.R.C.S., L.R.C.P.Lond., L.D.S.Eng.

LIST OF MEMBERS OF THE REPRESENTATIVE BOARD.

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A. COLEMAN, F.R.C.S., L.D.S.Eng.

C. D. ROBERTS, L.D.S.Eng.

J. OAKLEY COLES, L.D.S.Eng.

C. S. TOMES, F.R.S., M.A. (Oxon.),
M.R.C.S., L.D.S.Eng.

T. A. ROGERS, M.R.C.S., L.D.S.Eng.

T. UNDERWOOD, L.D.S.Eng.

C. VASEY, L.F.P.S., L.D.S.Eng.

HENRY SEWILL, M.R.C.S., L.D.S.Eng.

ASHLEY GIBBINGS, M.R.C.S., L.D.S.
Eng.

A. J. WOODHOUSE, L.D.S.Eng.

S. H. HUTCHINSON, M.R.C.S., L.D.S.
Eng.

ALFRED HILL, L.D.S.Eng.

FELIX WEISS, L.D.S.Eng.

G. A. IBBETSON, F.R.C.S., L.D.S.Eng.

For the Provinces.

C. SIMS, L.D.S.Eng., Birmingham.

S. LEE RYMER, L.D.S.Eng., Croydon.

R. ROGERS, L.D.S.I., Cheltenham.

J. T. BROWNE-MASON, L.D.S., Eng.,
Exeter.

R. E. STEWART, L.D.S.Eng. } Liver-

W. H. WAITE, L.D.S.I. } pool.

H. CAMPION, M.R.C.S.Eng., Man-
chester.

J. O'DUFFY, L.D.S.I.

J. H. LONGFORD, L.D.S.I. } Dublin.

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W. B. MACLEOD, L.D.S.Eng. } burgh.

J. DENNANT, L.D.S., Eng., Brighton.

C. SPENCE BATE, F.R.S., L.D.S.Eng.,
Plymouth.J. R. BROWNIE, L.D.S., Eng., Glas-
gow.

S. WORMALD, L.D.S.I., Stockport.

W. CAMPBELL, L.D.S.Eng., Dundee.

R. WHITE, M.R.C.S., L.D.S.Eng.,
Norwich.

T. MAHONIE, L.D.S.I., Sheffield.

W. A. HUNT, L.R.C.P.London,
M.R.C.S., L.D.S.Eng.

J. F. COLE, L.D.S.Eng., Ipswich.

G. CUNNINGHAM, D.M.D., Havard,
Cambridge.

C. GAINE, M.R.C.S., Bath.

R. KING, L.D.S.I., Shrewsbury.

Extract from Bye-Laws.

4. A person who is registered in the Dentists' Register shall be eligible for election as a member of the Association, provided he be of good character :

that he does not conduct his practice by means of the exhibition of Dental specimens, appliances, or apparatus in an open shop, or in a window, or in a show-case exposed to public inspection; or by means of public advertisements, or circulars, describing modes of practice, or patented or secret processes; or by the publication of his scale of professional charges.

5. Any registered Dental practitioner who can subscribe to a declaration (provided by the Association) embodying the preceding Bye-law, and who shall be recommended as eligible by any three members of the Association, may be elected a member by the Representative Board or by a committee appointed for that purpose by that Board.

THE WESTERN BRANCH OF THE BRITISH DENTAL ASSOCIATION.

President—CHAS. GAINE, M.R.C.S. Eng.

President-Elect—W. A. HUNT, L.R.C.P., M.R.C.S.

Vice-Presidents.

RICHARD ROGERS, L.D.S.I.
G. PARKINSON, L.D.S.E.

T. COOKE PARSON, M.R.C.S., L.D.S.E.
C. SPENCE BATE, F.R.S., L.D.S.E.

COUNCIL FOR THE YEAR 1883-4.

F. H. BALKWIL, L.D.S.E.
S. BEVAN FOX, L.D.S.E.
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W. A. HUNT, L.R.C.P., M.R.C.S.
G. W. PEARMAN, L.D.S.E.
ALFRED SMITH, L.D.S.I.
J. R. BATE, L.D.S.I.
W. V. MOORE, L.D.S.E.

Treasurer—J. T. BROWNE-MASON, L.D.S.E., Exeter.

Hon. Secretary—H. B. MASON, L.D.S.E., Exeter.

A person who is registered in the Dentists' Register shall be eligible for election as a member of this Branch, provided that he be of good character; that he does not conduct his practice by means of the exhibition of Dental specimens, appliances, or apparatus in an open shop, or in a window, or in a show-case exposed to public inspection, or by means of public advertisements; or circulars describing modes of practice, or patented or secret processes; or by the publication of his scale of professional charges.

Any Dental practitioner, who can subscribe to the conditions laid down in Bye-law 4, who has been recommended as eligible by any three Members of this Branch, may be elected a Member by the Council, and shall be admitted a Member of the British Dental Association.

THE SCOTTISH BRANCH OF THE BRITISH DENTAL ASSOCIATION.

President—JOHN SMITH, M.D., F.R.C.S. Edin.

Vice-President—WALTER CAMPBELL, L.D.S. Eng., Dundee.

Treasurer—J. AUSTIN BIGGS, Glasgow.

Hon. Sec.—W. BOWMAN MACLEOD, L.D.S. Ed., Edinburgh.

Council.

R. REID, L.D.S. Eng., Edinburgh.
A. SMYTH, Glasgow.
I. JABLONSKI PLATT, Stirling.
J. WOOD, L.D.S., Dumfries.

A. WILSON, L.D.S. Ed., Edinburgh.
A. BIGGS, L.D.S. Ed., Glasgow.
P. CROMBIE, L.D.S. Ed., Aberdeen.
M. FINLAYSON, L.D.S. Ed., Edinburgh.

Bye-laws.—The Bye-laws are identical with those of the parent Association.

THE MIDLAND BRANCH OF THE BRITISH DENTAL ASSOCIATION.

President—R. E. STEWART, L.D.S.Eng., Liverpool.

Vice-President—W. H. NICOL, L.D.S.Eng., Leeds.

Treasurer—S. WORMALD, L.D.S.I., Stockport.

Hon. Secretary—W. H. WAITE, L.D.S.I., Liverpool.

Council.

H. CAMPION, M.R.C.S., Manchester.	J. RENSCHAW, L.D.S.I., Rochdale.
J. N. MANTON, L.D.S.Eng., Wakefield.	G. BRUNTON, Leeds.
ROFF KING, L.D.S.I., Shrewsbury.	T. MAHONIE, L.D.S.I., Sheffield.
T. MURPHY, L.D.S.I., Bolton.	F. RICHARDSON, L.D.S.I., Derby.
J. S. CRAPPER, L.D.S.I., Hanley.	D. A. WORMALD, L.D.S.I., Bury.

Composed of Members of the British Dental Association who reside in the Midland and North Western Counties of England and of Associates who can fulfil the conditions laid down in the Bye-laws. The Annual Meeting takes place in April.

EXTRACT FROM BYE-LAWS.

2. The Association shall consist of Members and Associates. No one shall be eligible for membership who is not already a member of the British Dental Association. Any registered Practitioner of good character, who does not conduct his practice by means of the exhibition of Dental specimens, appliances, or apparatus in an open shop, or in a window, or in a show-case exposed to public inspection; or by means of public advertisements or circulars describing modes of practice, or patented or secret processes; or by the publication of his professional qualification, or scale of professional charges, may be admitted as an Associate. Associates shall be entitled to all the privileges of the Branch Association, but shall not be entitled to vote, or hold office therein.

3. Any Member of the British Dental Association may be elected a Member of the Branch by the Council of the Branch, at any of their Ordinary Meetings, on his sending a written application for election to the Secretary of the Branch.

4. Any registered Practitioner who can subscribe to the conditions laid down in Bye-laws 2, and who shall be recommended as eligible by any three Members or Associates, may be elected an Associate by the Council, on his forwarding the recommendation and his subscription to the Honorary Secretary of the Branch.

THE EASTERN COUNTIES DENTAL ASSOCIATION.

President—JNO. FENN COLE, L.D.S.Eng., Ipswich.

President Elect—ARTHUR JONES, L.D.S.I.

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Bye-laws.—1. Any person registered in the Dentists' Register shall be eligible for election as a member of this Association provided he be of good character, that he does not conduct his practice by means of the exhibition of Dental specimens, appliances, or apparatus in an open shop or in a window, or in a show-case exposed to public inspection; or by means of public advertisements or circulars describing modes of practice, or patented or secret processes; or by the publication of his scale of professional charges; or by the assumption of any title, degree, or diploma not recognised by this Association.

2. Any registered Practitioner, not disqualified by any bye-law, who shall be recommended as eligible by any three members of the Association (one being from personal knowledge) may be elected a member by the Council, the election to be by ballot, three black balls to exclude.

THE STUDENTS' SOCIETY OF THE DENTAL HOSPITAL OF LONDON, LEICESTER SQUARE.

President—STORER BENNETT, F.R.C.S., L.D.S.

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The object of the Society is the consideration of matters generally and specially appertaining to Dentistry. The affairs of the Society are managed by a Council consisting of a President, two Vice-Presidents, Treasurer, two Secretaries, and six other members. The President is chosen from the past Students who have obtained their degree of L.D.S.; the Vice-Presidents from past Students, with or without qualification.

Any gentleman wishing to become a member must be proposed and seconded at one meeting, and be balloted for at the next; one black ball in four to exclude. The entrance-fee for Ordinary members is half-a-crown, and there is an annual subscription of the same amount.

Ordinary meetings are held at 7 p.m. on the second Monday in every month, from October to March inclusive. The annual meeting for the election of officers, and other business, is held in January of each year.

Every member has the power of introducing one visitor, not being a Student of the Hospital or School, to the evening meetings, with the consent of the President. Visitors are allowed to take part in the discussion of the papers and clinical cases.

There is a Library in connection with the Society, the Secretaries discharging the duties of Librarians.

The Council offer a prize, value £3 3s., at the end of each year for the best paper read before the Society during that year.

STUDENTS' SOCIETY OF THE NATIONAL DENTAL HOSPITAL AND COLLEGE.

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Treasurer and Secretary of the Council—FRED. BATE.

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This Society, which was established March 15th, 1878, was constituted for the encouragement and diffusion of knowledge in Dental Science, and for the promotion of intercourse among its members, and all Students of Dental Science are eligible for Membership. All Candidates for Membership must be approved by the Council before being proposed to the Society for election. The Entrance Free is 2s. 6d., and the Annual Subscription 2s. 6d., to be paid in advance. The Ordinary Meetings of the Society are held on the first Friday in each month, from October to March, both exclusive, at 8 p.m. precisely. Each Member may introduce two visitors, not being Students of the Hospital or College, but the same Visitors may not be admitted more than three times during one Session.

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SUBLINGUAL TUMOUR AND IMMENSE SALIVARY CALCULUS REMOVED BY INCISION.

By GEORGE MACKERN, M.D.

THE following case of tumour under the tongue is of interest, owing to the large size of the calculus, which was found imbedded in the substance of the sublingual gland.

A man aged 51 years, came complaining of a large swelling in the mouth, and of excruciating pain in the left ear and whole left side of the head. For several months he said he had noticed the swelling, but during the last few weeks only had he experienced difficulty in speaking or swallowing. During the last fortnight the pain had become so severe as to prevent his sleeping or resting in any way. On being questioned, he said that as long ago as ten years he had had occasional pricking pains in his mouth, and that off and on ever since he had been troubled with abnormal sensations in his tongue.

On examination, a tumour was seen occupying the space between the left outer border of the tongue and the left alveolar arch of the lower jaw. This tumour appeared to be about two inches long by one and a half broad, and extended from the frænum linguæ in front outwards and backwards along the mucous membrane of the under surface of the tongue.

In consistence it was hard and brawny, and the mucous membrane covering it was thrown into folds, and had a peculiar livid look. In front, near the frænum, was a minute opening (the end of the salivary duct), and further back an ulcerated spot, which, however, corresponded in position with a prominent molar tooth: from this ulcerated spot a few drops of pus exuded.

Pressing the tumour backwards (and it moved easily as a whole) gave rise to great pain in the ear and left side of the head. Just below the jaw, in the submaxillary triangle, a

small hard and painful swelling could be felt; this he said had only shown itself quite recently, and it appeared to be a secondary inflammatory product. The symptoms complained of were:—pain and difficulty in speaking or moving the tongue; painful deglutition; dryness and soreness of the left side of the mouth; excessive pain of late in the left ear and left side of the head. I diagnosed an inflamed and swollen sublingual gland, due to obstruction of the duct, and at once introduced a small probe into the minute opening near the frænum. The probe passed but a short way, and apparently just under the mucous membrane merely. Passing a bistoury in, I slit the canal up along the probe, some drops of blood and some clear viscid saliva escaping. Carbolic solution was then injected, and hot fomentations externally and internally were ordered, and the man told to come back in two days.

On seeing him again the surface of the tumour was less congested than before, and the pain had decreased a little.

I now slowly and cautiously enlarged my first opening, going backwards and somewhat downwards into the very substance of the tumour. In a few moments my knife grated against something hard, and the nature of the case soon became evident.

After a good deal of careful dissection, a whitish calculus was laid bare at a depth of about half an inch. The anterior portion of the stone was very adherent, and had to be dissected out right round with dressing forceps; the stone was now easily lifted out of its bed, and the resulting cavity well syringed out with carbolic solution. Some blood, mixed with salivary secretion, escaped during the operation, but a little pressure easily stopped the bleeding. Afterwards some carbolised oiled gauze was placed in the cavity, which then healed from below.

The growth removed is a hard, white, calcareous looking mass, irregularly egg shaped, the small end, which *in situ* was anterior, being pointed and white, and shining as if polished. The surface is rough, like morocco leather, but with bosses here and there. The stone is one-inch and one-third in length, two-thirds of an inch in width at the broadest part, and three-eighths of an inch in thickness; it weighs exactly eighty-two grains. It can be scraped with a knife, but it is not soft or friable. There is no effervescence on the application of nitric acid, showing there is no carbonate of soda in the surface formation, but the addition of the acid causes a strongly foetid odour. The chemical composition is not yet finally determined.

It was thought at first that the tumour was cancerous, but it was evident it could not be so, for the following reasons:

1. The utter absence of any infiltration of the surrounding

tissues, the mucous membrane, being smooth and free up to the edge of the tumour. 2. The complete mobility of the tumour. 3. The long history of the case. 4. The fact that isolated cancer of the sublingual gland is not known to have ever occurred, or is exceptionally rare. The tumour could be distinguished from ranula by its hardness, solidity, and general appearance and position. It was argued, from its swelling in the submaxillary region, that it was cancer, but from its sensibility and its recent appearance it was judged to be merely inflammatory. The largest salivary calculus on record is described in Bryant's Surgery, it weighed forty-eight grains. The operation was followed by a continual and very troublesome discharge of thick saliva, which ceased on the third day, and was replaced by suppuration. The pus welled from below, and was apparently connected with the tumour in the submaxillary region, which continued to be very painful, and was more swollen than before. On the eighth day the man was well, but there still remained a small hard tumour in the submaxillary region, but it did not cause any inconvenience.

A REVIEW OF THE SCIENTIFIC PROGRESS OF DENTAL SURGERY FROM 1771 TO 1883.

By C. SPENCE BATE, F.R.S.

PRESIDENT OF THE BRITISH DENTAL ASSOCIATION; VICE-PRESIDENT OF
THE INTERNATIONAL MEDICAL ASSOCIATION, DENTAL SECTION.

(Concluded from p. 841.)

Observations made by solitary individuals, however industriously pursued, must be limited in area, and slow in progress, compared to the united efforts of a large and intelligent body, who having peculiar opportunities, are combined in their efforts to obtain all information on the history of the study in which they are engaged.

It is this latter endeavour that elevates any industrial labour to the higher ranks of a scientific profession, and it becomes those who have so recently taken every legal step to qualify for the higher status to encourage that culture, the habit of which fulfils the highest obligations.

But as professional men we have to do more with the pathology and the curative treatment of the organs we specially profess to study, and the more exclusive we become in that speciality the higher should our knowledge and attainments be in all that relates to it.

It is humiliating to my mind to have the question addressed to me, I have no doubt, as frequently as it is to others also,

What is the cause of our teeth decaying? Can nothing be done to arrest it? It is so contrary to all the evidences of a grand design in nature, that we cannot understand how it is that an organ evidently intended to be of the first importance to the healthy existence of man through his life, should perish so soon. No other organ does. Can you explain?

It would be presumption in me so soon after the able address on the subject, given by the late President, T. Cook Parsons, Esq., M.R.C.S., L.D.S., &c., of the Western Branch, and in face of the recent discussion at the Odontological Society, to trace the several theories of the causes of decay in teeth, further than to give a rapid review of the gradual and progressive changes in the thoughts of men of experience on the subject.

When Hunter wrote he must have been considered as being in advance of his age in the experience of all matters relating to the subjects on which he treated. He, however, could see no farther than that the decay in teeth arose from "rottenness," which "appears to deserve the name of mortification and something more." But what that something more was he failed to determine. "It almost always begins," he says, "externally in a small part of the body of the tooth, and commonly appears as an opaque white spot. This is owing to the enamel losing its regular and crystallised texture, and being reduced to a state of powder from the attraction of cohesion being destroyed. This does not arise from any external injury, or from menstrua which have a power of dissolving part of a tooth."

Fox, who wrote some few years later than Hunter, attributed the decay to the same cause as induced necrosis in bone; and Bell, who followed him, considered it to be the result of an inflammatory action in the structure of the dentine, not arising from any disease in the internal pulp, but from extraneous injury, such as cold or other action on a structure possessing so low a degree of vital power as the dentine, and not being able to recover from it, death and decomposition are the consequence.

According to Chappin Harris we are indebted to Dr. Parmly, of New York, for the earliest advocacy of caries being the result of external corrosive agents, about 1821.

But the late Mr. Robertson, of Birmingham, more than any other, worked out the idea and clearly demonstrated that whatever the cause, the action of dental decomposition commenced on the external surface of the teeth. But he again wanted to discover the immediate inducing influence and weakened the value of his argument by attributing it to the decomposition of unremoved particles of food lodged

in the deeper crevices and interstices of the teeth. This theory was followed in his Dental lectures by Mr. John Tomes, who stated that "with the loss of vitality the power of resisting chemical action failed, and that consequently the dead part is, under favouring circumstances, decomposed by the fluids of the mouth."

As yet we find that we arrive no nearer the solution of the mystery as to what is the immediate action that produces decay. Neither rottenness, decomposition, necrosis, or inflammatory action of dentine brings us nearer to the point.

Some few years since, Mr. Bridgeman, of Norwich, in an ably digested memoir, with much persistence and ability, argued stoutly in favour of electrolysis being the immediately exciting cause of that disintegration of the structure that we call caries, which having received the approval of the Odontological Society in the bestowal of the only medal of honour it ever gave, ought to have secured for it a better fate than it has received. More recently the researches of Pasteur have drawn the attention to a source of disease that was previously little contemplated. The early condition of microscopic germs, the embryonic stage of fungi in the form of bacteria of different specific qualities, have been shown to penetrate and take possession of all organic matter that has not the power of vital resistance. Pursuing this discovery of the illustrious French savant, Messrs. Underwood and Milles have sought for these germs in the decaying structure of the teeth, and found them in certain *micrococci* and rod-shaped *bacteria*.

Before discussing the merits of Underwood and Milles' theory, it is only fair to remind ourselves of the researches of MM. Wedl and Heider on the power of fungi to penetrate dentine, in a paper published in the *Comptes rendus de l'Academie de Vienne*, as far back as 1864. And more recently still in 1877-8, Drs. Leber and Rottenstein published their researches on the origin of caries through the action of *Leptothrix buccalis*.

There is (say these latter authors) no manner of doubt that the elementary parts of the fungus penetrate into the interior of the canals, and there develop in a manner to acquire a relatively considerable diameter. It also results from the very fact of the dilatation of the canals, that the appearance of the fungus is not accidental, and that it is not by a purely passive action that it invades the canals. It is necessary that there be a proliferation of spores infinitely minute and innumerable of the fungus to effect the dilatation of the dental canals. It is, moreover, very important that the elements of the *leptothrix* should have, at a certain stage, a mobility of

their own, in virtue of which they easily penetrate the interior canals. As for the rest, we have met in the canals with only the granular masses of the leptothrix, and never the filaments which appear to show themselves only at the surface.

But the fungi described by Wedl and Heider have nothing in common with leptothrix of Leber and Rottenstein, since it develops in the crust and dentine of teeth that have been extracted, after ten days to the depth of from two to twenty-five mm., and portions of dentine that have been exposed to their action were, after three or four weeks, pierced like a sieve.

Since Messrs. Underwood and Milles read their communication on "the Effects of Organisms upon the Teeth and Alveolar portions of the Jaws," at the Medical Congress in London, in 1881, Mr. Underwood informs me that they "have cut innumerable sections and stained them with an absolute uniform result, the germs were always present." Since 1881 many independent observers have noticed this fact, among them Professor Koch states that out of 1000 slides in his possession, there is not one in which germs are absent.

Dr. Miller, of Berlin, has also given his attention to the subject, and although he corroborates Underwood and Milles' researches, has arrived at different conclusions. He considers that leptothrix, bacteria, and micrococci, are but different stages of the same fungus; that leptothrix, which is found in the more superficial parts, becomes in the deeper converted by gradations into long bacteria, then into small rods, then into oval bacteria, and lastly into micrococci. I have not had sufficient experience to arrive at a decided conclusion, but I have noticed that the germ of fungi produced distinctly different mycelia when grown in different fluids; and my son, Mr. Hele Bate, informs me that the same germs in different atmospheres produce very distinctly different hyphæ. Whatever form they may undergo it comes to the same thing, that these micro-organisms are one of the chief factors in the production of caries. They produce fermentation and putrefaction, an acid is formed, and so break down and destroy the dental structures.

Milles, in the Odontological Society Report, 1883, p. 228, says, "This view of the active participation of the micro-organisms in the production of caries is strengthened by a consideration of the opinions now held in reference to them in general medical literature. Every year observations are being made showing that different forms of micro-organisms are really active factors in the production of disease. I need scarcely mention the bacillus of tubercle, which is considered

by most scientific men to be the active cause of acute tuberculosis and tubercular phthisis. So again with regard to the infectious diseases, we are gradually coming to the view that their active cause is some organism. Lupus, leprosy, septicæmia, erysipelas, gonorrhœa, and syphilis, may be placed in this class. Again, certain diseases in the lower animals, such as anthrax, cholera of chicken, &c., have been demonstrated by exact experimental observations to be caused by a special micro-organism. This may afford some little additional proof in favour of the fact that micro-organisms are really the active producers of caries."

There is no doubt but that a kind of destruction, closely resembling caries, has often taken place in bone blocks and natural teeth on dentures where of course there was no vascular or nervous connection with the economy, it seems evident that there were conditions present in the mouth at times capable of producing caries in dentine that was practically a foreign body; it appears therefore reasonable to suppose that such conditions might be reproduced out of the body, since they do not depend upon vital connections.

Although the experiments of Messrs. Underwood and Milles have been very elaborate and continued for two years, they have "not succeeded in assembling conditions capable of producing artificially anything like caries, save in one or two instances of so slight a degree that it was impossible to accept the change as evidence." In all their experiments there appears to be some condition that cannot be reproduced, and this condition they consider to be organic, and they are induced to infer that all special germs, though they can be grown in meat and other infusions, yet lose their special power.

That the germs of leptothrix, or some other fungi that we recognise under the generic name of bacteria play an important part in the history of dental caries must, I think, be recognised; but I am not prepared to admit that without any co-existing condition they are the original and superinducing cause.

First we are shown by the researches of Tomes and others that the tubuli of dentine are filled with living tissue, and secondly, the micrococci and rod-shaped bacteria of Underwood and Milles are too large to enter the smaller extremity of these dentinal tubes, and before they possess the power to penetrate into the dentinal structure, the fibrils that fill the tubuli must lose their vitality, and their calcareous wall must be removed.

When this is done the decalcified tissue affords a pabulum in which these germs may be produced and multiply. Fer-

mentation common to all fungus growths liberates an acid that removes the phosphates, opens up rapidly large areas where the bacteria thrive, but the first agency that removes the calcareous phosphates before the bacteria, either rod-shaped or spherical, are capable of being engrafted, must be sought for in an external agent.

If we go to the mountain top which is beaten only by the wind and the rain, or examine shores where the sea lashes our coast with its waves; or study the means by which the pholas and the saxicava eat their way into hollows in rocks, we shall find that wherever limestone exists, it is removed by a certain gradual process that carries it away. Nascent or freshly made carbonic acid plays its part, and carries off the lime in solution; so in the human mouth the earthy portion of the tooth is removed by this new born active agent which comes into existence wherever devitalised organic matter and oxygen come into close relation.

But in the teeth of the present generation, the absence of earthy material is a notable fact, the result of which is that there is less lime to be removed by insipient action before these bacteria can easily and rapidly take root.

Nature fulfils its plans with constant relation to conditional exigencies, and the loss of a permanent condition is a persistent inducement to change. Experience has shown if a fowl shall break its leg, that during the period of repair, the lime that is required to help in forming new bone is taken from other parts of the animal economy, with the result that until the bone is completed, the eggs that are laid are deficient of a hard external shell.

It is, therefore, highly suggestive that in all cases where development of bone is required, as in extensive cases of regulation of the teeth, or in general surgery where a large osseous repair is necessary, such as the filling the alveoli after extensive extraction of teeth, or the union of bone after compound fracture, the introduction of lime into the system is most desirable, and experience has shown that the use of the phosphate of lime taken as ordinary salt with food is under such circumstances conducive to beneficial results.

This leads us to consider that as a profession we should learn to speak with one voice in relation to points of importance in the general economy of the teeth. There is no doubt in our minds that the absence of lime from the teeth of the present generation is the primary cause of their rapid destruction, and this is largely due to the character of the food that is prepared, more especially to the vicious system of removing from wheaten flour all those salts that are of importance to the human system.

The case Mr. Woodhouse brought before the Odontological Society in which the children of parents with defective teeth had sound and well developed organs, presumably through the use of whole meal bread, is a strong case in point, and should lead us as a body to an uniformity in our advice and encouragement of a general good.

But as Dentists we have to do with the teeth as we find them, and here we must congratulate ourselves on the great improvement that has taken place in the power of retaining diseased teeth and restoring to usefulness, such as would a few years ago have been considered as being hopelessly irrecoverable. The extent of this process of repair can best be understood by saying that independent of amalgams and cement stoppings, 20,000 ozs. of fine gold are annually used in filling teeth.

There is no doubt but that the generous rivalry that has existed between the American and English schools has done much to further this, the manipulation and the materials at our command have immensely improved since the establishment of colleges and clinical instruction, but the filling of the recent schools must be good indeed that can surpass that having been done fifty years ago, which is still extant, even though executed by obscure but honest workers.

The only thing we have to fear, judging from some peculiar operations that were performed at the International Medical Congress, is that the student may mistake the means for the end, and be led by a factitious ambition to the display of his own ability and skill in manipulation, whereas he should ever remember that his duty in professional honour is to consider in all singleness of purpose before all things the requirements of his patient.

There are other diseases besides dental caries to which the teeth are liable. *Pyorrhœa alveolaris*, or the permature waste of the alveolar processes appears to be on the increase, more especially in the mouth of the young. That it is the result of fungoid germs, is indisputably evident, inasmuch as they can be placed in their living condition under microscopic examination, when an active power of vitality, that carries them across the field of observation is seen with all the motions of tadpole existence. Dr. Arkovy, of Buda Pesth, in the discussion at the International Congress, stated that he took "the pus in this disease and placed it in a watch glass full of water, with sugar and a small quantity of meat, and produced, after 48 hours at a temperature 37°-38° C. *leptothrix*, and in seven days the same myceleum-like formation which was in the pus, giving an evidence that *sperobacteria* under favourable circumstances, and perhaps only in the mouth, pro-

duces leptothrix, and under these circumstances, as afforded by the gingival margin and alveolar wall, lead to the production of a more complicated form of fungi."* The knowledge of the true nature of this disease must lead us to the better treatment of those mouths in which sound and healthy teeth appear to fail for want of their natural support.

In the future history of dental surgery, I believe, loose teeth will be the only ones that will of necessity require to be removed. Extraction, once so common, and still much too frequent, will be relegated to the barbarous ages and only be resorted to in cases of extreme necessity and for the preservation of neighbouring organs.

The system that has been adopted for the last few years of capping firm roots with artificial crowns for masticating purposes, has been so successful in practice, that it appears to me that it will gradually be more and more carried out, and that good and efficient substitutes will take the place of the lost teeth, with an efficiency and appearance the best mechanical contrivances will not equal.

This is a bold expression; for the advance of our mechanical dentistry has been enormous since the time when the battle-fields of Europe and the graveyards of our parishes were hunted over to supply the lost teeth of the living. Those substitutes have passed away for ever, and in their place the introduction of a beautiful porcelain manufacture has given rise to an enormous and increasing requirement. Formerly teeth were only used by the wealthy and the vain to supply a defective appearance; now they supply the place of an increasingly deteriorating organisation, assist efficiently in the preparation of food for digestion and add materially to the longevity of our race. The extent to which this is done may be best appreciated when it is known that two millions of teeth are annually disposed of throughout the civilised world, and for the implantation of these in the mouth, independent of the gold that is frequently used as a base, it is estimated that sixteen tons of rubber are annually required for the purpose.†

When Hunter lived the doctors were in a chaotic condition, but since then by combined action and working through the power of knowledge, they have built up a profession that differs from all others in having ennobled itself without state

* Trans. International Congress, vol. iii., "Diseases of the Teeth," p. 575.

† I give these quantities on the authority of Messrs. Ash and Sons, as also that with regard to the gold used in filling teeth, and they assure me that is within rather than beyond the estimate. But since that has been in type I have seen it stated that eight millions of teeth are required for America alone.

patronage. One of the foremost jewels in its crown has been the readiness with which its members have given their talents to the poor.

The hospitals of England are an enduring monument, and blesses him who gives as well as him who receives, for it is through the experience of the million that knowledge increases, and the great skill that is attained in delicate manipulative surgery is the return for a warm and large hearted charity.

We have been until recently what the medical profession was before 1815, and here I cannot refrain from recognising that throughout our long struggle for existence we have had the support of the bulk of its leading members. And we must remember, now that we have excluded from practising any but those who can legally join our ranks, that it has become a duty with us that we should remember, in their necessities, our poorer neighbours.

Through Dental hospitals and dispensaries we can alleviate sufferings and preserve useful organs, and I see no reason why artificial substitutes, which, if it be true, are necessary to promote the health and prolong the lives of the rich, are not as essentially necessary to the poor. Some of the overflowing coffers of the wealthy might be directed into this channel, and this would be the case if they could only hear as most of us have heard, the wailing of the hungry poor man who had not the power to eat the food that was placed before him.

In a rapid glance such as the time would permit, I have endeavoured to trace the outline of the scientific progress of dental surgery, but I cannot close without congratulating ourselves on the recognition of our professional status in the title that Her Majesty has thought proper to confer on one who was ever foremost in the elevation of that profession which has made his name illustrious—I mean our friend, the President of our section at the International Medical Congress, who was to have been with us to-day, Sir Edwin Saunders.

But there are others who have worked for us without prospect of title or reward excepting such as is stored in the hearts of their friends, and foremost among these is Mr. James Smith Turner.

In commencing this sketch I alluded to John Hunter as having laid the foundation of scientific research in dental surgery, and in ending it I refer to another, to know whom is itself a professional education.

He, while devoting his life and energy to scientific research that has made his name famous, has through a long and

trying illness, which alone precludes him from being here to-day, sacrificed both time and health in attaining for us that legal status that places us among the acknowledged professions. And although titular honours may not have been his lot, he may rest assured that in the love and gratitude of the Dental profession the name of John Tomes, F.R.S., is ennobled.

MALFORMATION OF THE MOUTH IN A NEW-BORN CHILD.

By Dr. AMÉDÉE SOURRONILLE.

Mrs. X., of A. . . . (Laudes), was delivered at full term, on the 20th August last, of a well developed female child, which presented the following malformation.

The upper lip shows in its centre a large solution of continuity, which circumscribes an irregularly shaped orifice, itself surrounding a hard quadrangular, mamillated, bright red tumour. This is attached to the cartilage of the septum narium by a short fibrous pedicle and is quite free from adhesions to the neighbouring parts; it has a slightly oblique direction from left to right and from below upwards, so that in this position it closes the opening into the right nasal fossa by raising the ala nasi of the same side.

Two small lateral symmetrical tubercles, formed by the incisor tuberosities, are the sole representatives of the entire anterior portion of the superior maxilla and are separated by a raphe at their line of junction; they support a fleshy flap projecting somewhat from below upwards, which is the rudimentary vestige of the middle portion of the upper lip.

The nose is large and flattened. The interior of the mouth presents a no less striking appearance. The whole of the anterior portion of the superior maxilla up to its very borders, the arch of the palate, the soft palate, are altogether wanting.

The septum narium is perfect. The two nasal fossæ and the mouth communicate so freely that in reality they only form a single cavity. This malformation has been called wolf's mouth. (*Gueule-de-loup*.)

The tragus of the right ear is represented by a small tubercle, which leaves the opening into the external auditory meatus perfectly free.

After some short considerations on the origin of this malformation, Dr. Sourronille proceeds to state that the child had been fed by filling a cylindrical conical sponge, covered with a thin piece of linen, with milk, and expressing it drop by drop

into the child's mouth. Great care had to be taken on account of the slowness and difficulty in swallowing.

Up to the time of the report the child had been doing well, but Dr. Sourronille was not very sanguine as to its future progress.

FLUXION DENTAIRE.

By Dr. MAGITOT, of Paris.

(Continued from p. 838.)

Thus we see that *fluxion* is caused by the extension by continuity of tissue from the initial osteitis to periostitis of the maxilla, and to the soft parts of the face. This is called *fluxion* by propagation. That which proves the exactitude of the process is, that when in cases of this kind one proceeds to try extraction of the wisdom tooth, we find it entirely devoid of any injury to the periosteum or any appreciable lesion whatever. It has been an agent, without any participation of its own substance, in the occurrences which have happened. We shall accordingly comprehend that if osteitis, either spontaneous or traumatic, occurs in the maxilla, and without the direct intervention of the teeth, the same series of occurrences, terminating in the *fluxion*, will occur exactly. These cases are very rare, for it has already been superabundantly proved that an immense majority of affections of the jaw are the consequence of disorders and affections of the dental apparatus, either in the form of accidents of evolution, or of lesions of tissue in the adult state.

MECHANISM AND PROCESS.

In order to examine with the greatest possible precision the mechanism and formation of a *fluxion*, let us proceed to follow its evolution from the place of its origin, which is invariably from a fixed point in the dental arc. We shall generally find that the initial lesion is alveolo-dental-periostitis simple, or an accident of dentition, or perhaps still later osteitis by compression of the wisdom tooth; the alveolar border is constantly the primitive focus. If we will suppose now the most common case, that is to say, periostitis of the summit of the root, the first phenomena of propagation from this point consists in osteitis of the bottom, even of the alveolus itself, and soon after periostitis of one surface of the bone, or two surfaces simultaneously. It is generally in the direction of the external wall that the process extends, especially in the lower jaw, where the abscesses and fistulæ rarely burst under the floor of the mouth.

In the case of the upper jaw, on the contrary, the occurrence

of these accidents to the internal of the arc and even under the palatine region, is sufficiently frequent; in the last case, besides the *fluxion*, properly so called of the skin, does not appear. It is in a centrifugal direction then which these phenomena usually extend. Sometimes it arrives at a point corresponding to the gum, and sometimes it bursts to the skin of the face. Here is presented a special point of view, and we will describe a distinction which will explain and in many instances even enable us to foresee which will be the point of arrival, whether towards the gum or towards the skin, in other words, whether the *fluxion* will be gingival or facial.

This distinction will depend upon a determination of the level of the initial lesion relatively to the depth of the vestibule of the region. We have already developed this point in another article in the "Dictionnaire Encyclopedique des Sciences Medicales." (See Bouche.) We will return to it here, briefly. In the adult, the depth of the vestibule measured from the free border of the teeth to the bottom of the furrow, is in the mean 20 millimetres for the inferior groove, and 25 millimetres for the superior, taking from the anterior part of the mouth, close to the bridle of the lips, grows especially to the level of the canines, and then to diminish insensibly even to the wisdom tooth. We are thus enabled to say, by a constant anatomical correlation, it follows distinctly the undulations and the curve in a direction parallel to an imaginary line, which will pass along the summits of the dental roots.

This matter has great importance from a surgical point of view, and gives us the explanation of the seat and of the pathogeny of abscesses, and of fistulæ of dental origin. For if the seat of periostitis is upon the sides of a dental root and not far from the neck, the phlegmonous complications to which it gives place will be simply gingival, and the abscess which it produced will have its opening in the cavity of the vestibule at a variable height from the alveolar border. If, on the contrary, the periostitis occupies the summit of a root, the issue of the ulterior consequences will be infinitely more serious, and will depend absolutely on the proportion of the level between the point of the periosteum affected and the depth of the groove; when the summit of the root corresponds to the cavity of the vestibule, the abscess will open then in the latter; but in most cases the summit corresponds to a deeper level, and the inflammatory phenomena which occur seek a more direct issue, and are carried towards the integument of the jaw across the loose cellular tissue of that region. The phlegmon is then facial, and the opening cutaneous.

These anatomical particulars, when external or facial fistulæ,

result principally from alterations of molars, of which the long roots pass almost always beyond the bottom of the vestibule, whilst the canines and incisors which are ordinarily restrained in their height, rarely give rise to these accidents. The special position of the inferior wisdom tooth likewise gives a reason for the relative frequency of accidents of this kind. The mucous membrane of the vestibule is almost always turned up to the level of the neck in connection with that which covers the coronoid apophysis, so that the whole of the radicular part of this tooth is found to correspond to a point inferior to the bottom of the sulcus.

It is thus we so frequently meet with phlegmons and fistulæ of the cervical and facial regions in the list of accidents of the inferior wisdom tooth. This point of view being fixed, we find that the inflammatory process is carried sometimes towards the mouth, and sometimes towards the exterior; it is only in the gravest and most extensive cases of this disorder that the issue will double, or both facial and gingival at the same time. We will pass over in silence other modes of termination towards the maxillary sinus, the floor of the nasal fossæ, &c.; these varieties not involving *fluxion*. When the phenomena takes the direction of the vestibule, the swelling or the *fluxion* of the jaw will assume the different forms which we have described. But the termination will be affected here again in two ways—that is to say, that the gingival *fluxion* and the abscess will open directly into the vestibule, on a level of the border of the insertion of the gum, after having unfastened the attachments. This last issue is likewise an indication that the initial periostitis is propagated by continuity even to the summit of the neck, or that it has its origin in the neighbourhood of the last point.

DISCUSSION ON THE THEORY OF CARIES.

(Continued from p. 843.)

MR. A. COLEMAN: I will only detain the Society a short time, after having trespassed so much at the last meeting. Mr. Sewill, in opening this subject, laid immense stress on the fact that "caries was not a disease." Afterwards he says that "caries is by far the most important of all Dental diseases," and I think we may come to the conclusion that it is a disease, and that it has a pathology. Mr. Milles has pointed out that the view which is gaining ground is that not only the diseases he has mentioned, but many others are the result of micro-organisms; and if Dental caries be, as I believe he and Mr.

Underwood assert, chiefly due to these, it must be likewise a disease. There is another point which I noticed on reading Mr. Sewill's speech, but which I overlooked when I was discussing the subject at the time, and that is, that one of the "incontrovertible facts"—and I am very glad that Mr. Hutchinson has alluded to this—is, "if caries commenced in these tissues as a true disease, we should certainly expect to find at an early stage some vascular disturbance of the pulp; but this never occurred."

Mr. SEWILL: May I ask where that is called an incontrovertible fact?

Mr. COLEMAN: "Do the incontrovertible facts which we now possess as to its etiology and pathology fully account for the phenomena of Dental caries?" It is stated that this "never occurs." Surely that is put forward as an "incontrovertible fact." The only matter to which I would further allude in connection with this is one I forgot to mention in my former remarks. I did allude to the circumstance that we frequently found superficial caries to exist on the masticating surfaces of the molars, and when the thin enamel was broken away, the surfaces become very hard and very highly polished—more so, I believe, than we could calculate would occur from the ordinary attrition of mastication, and the rubbing of the teeth together. I think I may say that this will never be found to occur in dead teeth. I candidly admit that such teeth may undergo caries at their anterior or posterior surfaces, and then become dead. Then there is this other fact. Do not we find in cases of caries, especially those which we are apt to call the rapid or acute form, that the exposed dentine becomes hypersensitive? There are certain operations that have been performed in which we may drill into the healthy dentine. There was the operation of Dr. Bing, in which artificial teeth were secured in place by means of gold pins inserted into healthy teeth. I have seen a few patients upon whom that operation had been performed, and I asked them if it was painful, and they said, No, it was quite tolerable. We know that in many cases of Dental caries the surrounding dentine becomes very sensitive, and I think that is some evidence that a pathological change has taken place, due, no doubt, to what we all admit to be the primary cause of Dental caries—external agencies, acids, and the fermentive processes. But these acids and fermentive processes are continually acting. The teeth are constantly exposed to them in greater or less degree. With regard to those fissures where we sometimes find decay to take place, those fissures may remain through life, and yet decay not take place in them. Therefore, I think we must maintain that in the cases where decay does occur there is a failure; there is a

want of that which arrests, and that which counteracts, those principles which are continually and ever acting upon the teeth.

Mr. STOCKEN: Mr. President,—I did not contemplate making any observations upon this subject, and therefore the few remarks I am about to make will be very short. I think that we must in this matter look to the original cause, and that is in the parent. If the tooth is constitutionally bad, then it is liable, more than under other circumstances, to be acted upon by the secretions of the mouth. I think that chemical action has rather more to do with caries than vital action; for I have seen in my own practice constantly that when relief has been given to crowding, the teeth on that side of the mouth have remained perfectly good for many years, whereas on the other side, where the crowding has remained, the decay has gone on in almost all of them. I can recall at this time one case that most clearly exemplified this. It was the case of a young lady who came to have her teeth regulated. I came to the conclusion it was necessary to give relief on both sides. I operated on one side and an appointment was made for her to come again and have the other side operated upon. She did not come, and she grew up to womanhood, and it was not until some years after the operation that I saw her again. On the side where I had operated there was not a single carious tooth, whilst on the side not operated upon, almost every tooth was decayed, from the canine backwards. As a practical application of my opinion as regards the chemical action, I have for some year or two now suggested to my patients that they should use an alkaline powder for cleansing their artificial teeth—a powder containing simply chalk and the neutral carbonate of soda. I find the advantage of it is this, that the neutral carbonate of soda renders fluid the mucus which generally attaches itself to artificial dentures, and which patients are unable by the aid of soap or simple brushing to remove; and if not thoroughly removed it will undergo change and become acid, and the result is a dissolving of the phosphate of lime. I have found that since my patients have used this prepared chalk and neutral carbonate of soda there has been less mischief resulting, and I think you cannot have a better proof than this, that chemical action is a most important factor in the destruction of the teeth.

Mr. HENRY MOON: I think that most of the arguments used, especially perhaps those used by Mr. Charters White, in favour of the acid theory in opposition to the action of micro-organisms, will apply equally in favour of the micro-organisms; but perhaps the facts mentioned by the last speaker point rather more to acid as being one of the prime factors, and some facts that I have myself noticed I think

point also in the same direction. We have all seen a zone of decalcification of white, chalky enamel running round wisdom teeth. My own belief is that that results from the difficult eruption of the wisdom tooth, the tooth being held in contact with the edge of an irritated and inflamed gum at that point. The same thing is said to happen if silk, used in regulating teeth, has been kept for any length of time in contact with the tooth. As to the decay occurring in weak modern teeth in the natural fissures, in a much greater extent than it occurred in teeth of stronger structure, that is accounted for in this way, that those natural fissures are simply to be regarded as the points of junction of the first formed caps of dentine and enamel, and those points of junction are almost invariably at the present time faulty.

Dr. GEORGE FIELD : If the presentation of absolute facts debars one from speaking on the subject, I think I should be debarred, not having made any long-continued series of experiments. But from simple observation of the mouth I should feel disposed to accept the position taken by Dr. Abbott, of New York—the combination of the two theories, the chemical as well as the micro-organic. I would simply propose, instead of making any statements, to ask one or two questions. Why is it that the points at which we find decay are those, not where the brush will reach, not where the facets are made upon the teeth, not in the lower incisors, which are constantly washed by a free flow of saliva, but always just at the margin of the gum, usually a diseased gum, and just below these facets of the teeth, and in the fissures of the teeth? In the fissures the decay is arrested if there chances to be a deposit of tartar, and in the lower incisors I think I have never found it present except where there was an inflamed state of the gums. I account for that by there being a natural tendency to, as it were, draw in, or, in other words, to suck through the teeth, forcing the flow of saliva between them. That is done unconsciously. Perhaps I may mention that in the Scotch we find the very best tooth development and the least decay. That has been my experience here in London with the adults; but the children are not so good as the adults. That shows, as it seems to me, that there is an organic change in consequence of altered habits of life, food, nutrition, and so forth. It would also appear to support the theory of the combined action of the two agents: first, that enamel is acted upon chemically, and afterwards we find the presence of micro-organisms. I simply put these as questions, rather than as a statement of facts, as I should not presume to present any such things as facts.

(To be continued.)

ON PAIN.*

By ARTHUR UNDERWOOD, M.R.C.S., L.D.S.Eng.

Mr. A. UNDERWOOD dealt with some points which had frequently forced themselves on the notice of Mr. Woodhouse and himself during their morning's work at the Dental Hospital in Leicester Square. He discussed a small group of pains—those which were inflicted upon dental patients during efforts to relieve other morbid conditions. Allusion was made to susceptibility to pain, which was not a disease but a symptom only, and the writer glanced at what really resulted to a nerve when, so to speak, it uttered its cry of pain. There were, he remarked, a few special methods of treating teeth, the mischievous results of which had attracted his attention and Mr. Woodhouse's, and amongst these was the insertion of metallic fillings without precaution being taken to prevent the conduct of sensations of heat and cold—both in the case of amalgam fillings and gold. Retaining points were not infrequently drilled into tissue that was slightly sensitive, this being unavoidable, but it was not necessarily a safe proceeding to drill deep holes and fill them with gold, even if the dentine at the time of drillings was not sensitive. It was not always safe to insert amalgam fillings into deep cavities in contact with the dentine, although the process of excavation had been painless. Mr. Underwood gave the advice of an American practitioner—never to insert a metal filling into any tooth under any circumstances without some non-conducting material being interposed between the dentine overlying the pulp and the metal, if the cavity was deep enough to admit of such protective material. In conclusion, he regretted the unnecessary suffering and mischief done at times by reason of the juxtaposition of metal fillings and sensitive dentine in the immediate neighbourhood of living nerves, and urged the importance of exercising skill and care.

Mr. BALKWILL (Plymouth), asked the reader if the fibre of the pulp, which he said so nearly approached the enamel, was or was not vascular?

Mr. UNDERWOOD: It was.

Mr. KEYS asked what Mr. Underwood used between his fillings and the dentine, as a non-conductor?

Mr. UNDERWOOD said he generally used some non-conducting substance, such as Weston's Cement.

The PRESIDENT: You vary your medium, I suppose.

Mr. UNDERWOOD: According to the occasion.

* Summary of paper read, with full discussion, at the Annual Meeting of the British Dental Association, Plymouth, Aug. 24th, 1883.

Mr. J. T. BROWNE-MASON (Exeter), said he had occasionally found in heavy gold fittings that a pellet of asbestos made a very useful non-conductor. It was rather troublesome to get the gold packed over it, but after a little while it soon welds up into a compact mass. He had found the asbestos to be as useful a medium as any.

The PRESIDENT: Do I understand that in the case of all stoppings, you recommend the use of a non-conducting material?

Mr. UNDERWOOD: Wherever they are deep enough.

Mr. WOODHOUSE (London), said he had used with great advantage, a very simple substance, whether the stoppage be with cement or gold, viz.: a piece of blotting paper damped with carbonic acid, with a little paste made of carbonic acid and Ash's Rock Cement, placed upon it. He put that in the cavity, took up the excessive carbonic acid with a little amadou, and then stopped. The Ash's Cement which he had used was the powder.

Mr. MASON: Does that set well?

Mr. WOODHOUSE: It gets solid as you take the carbonic acid out with the amadou.

Mr. STORER-BENNETT said they must be all much obliged to Mr. Underwood for his excellent paper. There was one point in his paper that would not accord with the experience of most of them. He said it frequently happens that a small gold filling is put into a cavity, and there is no pain, either in excavation or filling, but that after a long interval, when even the patient has forgotten the circumstance, pain arises and increases to such an extent that the nerve becomes inflamed; and then, on the patient seeking advice of the Dentist, the filling is removed, and it is sufficient to insert a non-conductor under the filling, and the inflammation of the pulp subsides. Now it did not commonly happen that we get this train of symptoms where there was no pain at the beginning; neither was it a common thing to remove the pain by simply taking out the filling and putting in a soft non-conducting filling.

Mr. UNDERWOOD, replying on the discussion, observed, with regard to Mr. Bennett's question, that probably there had been an omission in his paper. He ought to have stated that the thing required to be dressed and treated before inserting the non-conductor. He was glancing at a suppositious case, and he imagined it would be supposed he should treat the case before the final setting. The pain would not disappear by magic. If Mr. Bennett had been earlier, he would have heard him say in the paper that irritation of that sort did not disappear in a hurry. It might even require the use of drugs—chloride of ammonia, morphia, and quinine being

sometimes necessary to get rid of the excitation of the nerve. But the final disappearance of the pain depended on the removal of the conducting material from contact with the dentine. Of course the fluid form of Ash's cement would not be used, it would be too irritating.

ON THE PREMATURE EXTRACTION OF THE DECIDUOUS CANINE TEETH.*

By S. J. HUTCHINSON, M.R.C.S. and L.D.S.Eng.

DENTAL SURGEON TO UNIVERSITY COLLEGE HOSPITAL, AND THE DENTAL
HOSPITAL OF LONDON.

Mr. HUTCHINSON said that this question was one which, in his own practice, he had found very difficult to answer; he had therefore tried to give the line of treatment which he hoped would prove to be the right one. He had consulted four of the best known text-books on Dental Surgery, but he found the question of premature extraction of temporary teeth scarcely received the attention it deserved. One text-book held that it was impossible for the extraction of the temporary teeth to cause contraction of the jaw, and that premature extraction "could not exert a prejudicial influence upon the temporary teeth." He thought these opinions were liable to be, and often had been misconstrued, and he therefore thought they were dangerous. The other three text-books all condemned the practice of too early removal of the temporary teeth, in which opinion he certainly concurred. He exhibited models which showed obviously that premature extraction of temporary had undoubtedly exerted a prejudicial influence upon the arrangement of the permanent teeth, and he pointed out the necessity of preserving the deciduous molars by filling, &c., and of *not extracting* the deciduous canines at seven or eight years to make room for the permanent lateral, as the permanent canine was not due until twelve, though it might come at ten years of age, and during these three or four years much space would be gained. He then gave a summary of the various directions in which the teeth move in the maxillæ after their full development consequent upon extraction of one or more of the series. He then described the growth of the jaws and the influence this has upon second dentition, pointing out the well-known fact that the actual space occupied by the ten anterior permanent teeth is very nearly that of their pre-

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decessors, the obliquity of the former compensating for the latter being vertical, this arrangement giving room for the larger crowns of the permanent incisors, and admitting the canine, this being a strong argument for the retention of the temporary canine as long as possible. He considered the various questions of the facial expression depending on the proportional size of the teeth and jaws, and maintained that the proper time to attempt to rectify dental irregularity was, as was commonly held, after the eruption of the second permanent molars, except in unusual cases, and that permanent laterals kept back by temporary laterals should be pushed forward into place by plates, and not treated by the extraction of the temporary canines, as was too often done. He claimed no originality for his paper, but he hoped the publicity given to the Association's transactions would allow this very important topic to receive the attention it deserved, and perhaps medical men would be attracted to the points upon which stress was laid, as they were often asked by anxious parents to extract the temporary canine to make room for the permanent lateral, to the great detriment of the future regularity of the teeth.

Mr. GADDES offered a few words in corroboration of the general principle underlying the subject of the paper. In 1876 the speaker published, in a monthly review of Dental Surgery, a clinical lecture on this very subject; and when giving the lecture he had a collection of patients (children) and also models, showing the effects of the premature extraction of the second temporary molar, and also of the temporary canine; these cases and models showed that if the second temporary molar were removed before its successor was imminent there was irregularity in the bicuspid region, the second bicuspid taking a position usually external—or it may be internal—to the arch. If, on the other hand, the temporary canine tooth were removed before its successor was imminent, *i.e.*, a matter of nine months before, the first bicuspid could come down close to the lateral tooth in a similar relation which it held to the lateral tooth before either of the teeth had appeared in the mouth, and therefore by the time the permanent canine tooth came down there was no room for it—the lateral and the first bicuspid were in immoderately close opposition, and there was no room for the permanent canine, which therefore took a position external to the arch. But with regard to the premature extraction of any other temporary tooth, he had no evidence,—nor had he since found any evidence—of evil results following the premature extraction. The line of treatment he (Mr. Gaddes) adopted in the case which Mr. Hutchinson had brought before their notice, where the laterals

were close, or in irregular position, was this—instead of removing the temporary canine, and when there was no possibility of getting the lateral tooth forwards, he removed the first temporary molar and drew the temporary canine back by means of a regulating plate, and then sent the lateral into a forward position. The fact of two temporary molars occupying more room in the jaw than the two succeeding bicuspid, allowed them to occupy some of that space by means of drawing the first temporary molar into a more posterior position.

Mr. WOODHOUSE said he felt that, as his practice differed considerably from that of Mr. Hutchinson, he should not be true to his principles if he did not say a few words. He entirely agreed with what Mr. Hutchinson had said as regarded the preservation of the temporary teeth as long as possible; but certain conditions sometimes arose in which the temporary canine, especially of the lower jaw, should be removed. His experience was very large, because for 30 years he had been Dentist to the Foundling Hospital, where he had the exclusive care of 300 children, and could do what he liked with them—and what was more, he could watch their cases. One of the great disadvantages of private practice is that often you treat a case and don't see the child at all again, and have no opportunity of noting the result. But a man who had children constantly under his care could see the result of his treatment. The teeth of the children at the Foundling Hospital were very regular, and he should be pleased to take Mr. Hutchinson through the institution, and show him the result of his treatment. His experience as regarded the removal of canines, referred chiefly to the lower jaw. If the lower incisors were being irrupted irregularly, either standing crosswise, or being within or without the arch—he found them oftener within than without—his experience was, that by giving them room, by removing the canines, they always came straight. If Nature had the chance, she would put the teeth in the position which they ought to be in, that was his experience. If the Dentist did not take out the temporary canines in that condition, he might push the lower incisors into line; but he thought they were all agreed that if they were twisted round no mechanical power available could put them straight; whereas, if they were given a chance while still growing they did not remain transverse, but turned themselves round and became straight. For that reason it was most desirable to remove the lower canines. Of course it required great judgment to do it only in proper cases. Some cases very likely might be corrected as Mr. Hutchinson recommended, by pushing them out with a plate.

He (Mr. Woodhouse) had never adopted the plan, but it was quite possible that it might be desirable at times. In the case of the upper jaw, his treatment was very much to leave Nature to herself, for he found that in the upper jaw you could much more easily get the incisors into position. There was one plan which he had adopted lately with great success, and he mentioned it because he thought it so valuable that it should be at once known. The removal of the first permanent molar was often a matter of great difficulty, the second molar coming forward and taking the place of one of the bicuspid. He thought he had overcome the difficulty by retaining the molar in its place with a plate, and allowing the bicuspid to walk back of themselves.

The SECRETARY asked if Mr. Woodhouse gave any attention to articulation in those cases? Sometimes the bicuspid interlocked.

Mr. UNDERWOOD said, that in thinning out, he always, if possible, removed the whole series. He either removed the second and first bicuspid or the six-year old molars, and in the case first spoken of the six year old molars below as well as above, and as the consequence the lower bicuspid walked back as well as the higher. He had not found a retaining plate necessary for the lower jaw; the lower six-year molar had not shown the same tendency to come forward as the upper. Speaking of teeth walking back, he had never seen cases in which the bicuspid travelled back so rapidly in the upper jaw as in the lower.

Mr. BALKWILL said it was only fair to the author of the paper, to mention that his late partner (Mr. Coles), in cases where the permanent incisors were complicated with the deciduous canines, always had great reluctance to take out the deciduous canines; rather than do that, he would take out the deciduous first molar behind, thinking that that gave room for the deciduous canine to travel back. He could not say that he himself ever had any hesitation about taking out the deciduous canines.

Mr. BROWNLIE (Glasgow) said he had some reluctance in supporting Mr. Underwood, looking at the great experience enjoyed by Mr. Woodhouse. But he was bound to say that the subject had great interest for him. He had given it some little attention according to his opportunities, and he could assure the meeting that as far as Mr. Hutchinson had gone, his views were quite in accord with those which he (the speaker) had been gradually acquiring. Indeed, he had a suspicion, from some of the later statements in Mr. Hutchinson's paper, that he was disposed perhaps to go a little further than the statement which he made in the body of his paper, and go

the length of saying that it was a mistake to extract any temporary tooth except for the purpose of making room for its immediate successor. He had lost faith, or rather he had no belief whatever, in the theory of contraction. The subsequent changes taking place when temporary teeth had been extracted early, he had come to the conclusion, were due to what Mr. Hutchinson had referred to, viz., the travelling of the teeth. All crowding together of the teeth could be quite accounted for in this way without entertaining the idea of contraction.

Mr. UNDERWOOD: At this late hour I can only thank those gentlemen who have been kind enough to offer friendly criticism.

ON CONTOUR AMALGAM FILLINGS.*

By G. CUNNINGHAM, D.M.D., Harvard.

Mr. G. CUNNINGHAM, D.M.D., described the capabilities of amalgam and the mode of preparation, as well as the *modus operandi* of filling the tooth. He devoted attention to the employment and preparation of matrices. The reader remarked, regarding his experiments in this matter, that it would no longer do for Dentists to be content with the mere stopping of a cavity, they must try to give an æsthetic finish to their surgical treatment of a lesion by restoring as far as possible the original beautiful contour of the tooth, both for its intrinsic value and for its enhanced effect, as well as for its increasing the area of the masticating surface.

The PRESIDENT thanked Mr. Cunningham for his paper, and said he himself had been for some years past in the habit of doing something like that which he had shown them.

The SECRETARY said he was sure they would join with him in congratulating Mr. Cunningham on bringing the matter before them in the painstaking way he had done. They were too much in the habit of looking upon amalgam as a last resource. In the cases Mr. Cunningham had shown it certainly was a resource of considerable value. He thought there was a great deal of work to be done in this direction. Experiments in this direction were received with a certain amount of impatience by some and with contempt by others. He remembered that some few years ago there was a practitioner of New York who made some very elaborate experiments with regard to the durability, the expansion, and the contraction of amalgam stoppings; and he also showed some interesting work in the way of applying matrices to teeth

* Summary of paper read, with full discussion at the Annual Meeting of the British Dental Association, Plymouth, Aug. 24th, 1883.

when using amalgam stoppings. At one of the meetings where he was speaking of the qualities of stoppings and of their application, somewhat as Mr. Cunningham has been doing now, one gentleman asked impatiently, "What's the good of all that? What's Dr. Bogue trying to do?" adding that he thought gold was much better. Dr. Bogue simply said, "We have been trying to do without the forceps, but haven't succeeded yet." That answer clearly brought to his mind the importance of perseverance in their investigations. He was satisfied that there was great room for the judicious use of amalgam; but of course there were cases in which gold was really the most economical and effectual. They must all aim at excellence of work, but they could not all have the skill of manipulation, and the determination to carry out their object despite inconvenience to the patient, to enable them to apply gold as some people seemed to be able to apply it. He would like to mention one application of amalgam which he had never seen out of his own practice, viz., using an incisor tooth to make up the side of a molar, filling the cavity with amalgam, bending pins to the mineral tooth, and tying it into position by a ligature afterwards removing the ligature when the amalgam has hardened.

ON A PROCESS OF HARDENING INDIA RUBBER.

By G. BRUNTON, Leeds.

Mr. BRUNTON showed how dental rubbers in steatite might be hardened without the aid of flasks, and how time might be saved and better work be produced by the use of steatite instead of plaster of Paris as an investment for vulcanising. He also demonstrated how the use of flasks might be dispensed with for all classes of vulcanite work, and referred the members to a work on "Mechanical Dentistry," written by Mr. Balkwill, of Plymouth, for further information on the latter point.

Mr. CALEB WILLIAMS said, that in 1870, he had the honour of reading a short paper at Leamington on a somewhat similar subject, on a "A Method of Packing Vulcanite on the Model before Casting." He had since used the method a great deal, and found it an almost perfect way of packing vulcanite, even when vulcanising in the ordinary way; and he could quite understand that by vulcanising in the way the essayist proposed it would be more tough than in the ordinary way. In packing vulcanite on the model there was no danger

* Summary of paper read, with full discussion, at the Annual Meeting of the British Dental Association, Plymouth, Aug. 24th, 1883.

of the teeth being out of place, or of the bite rising. Did Mr. Brunton say that he coated the model with a solution of vulcanite?

Mr. BRUNTON: Rubber in chloroform.

Mr. WEST asked what method Mr. Brunton adopted for trying in plates, say an entire set?

The PRESIDENT: Wax, I suppose.

Mr. BRUNTON: The usual one.

Mr. BALKWILL (Plymouth) confessed himself quite overcome at finding someone using this method of his. He was so laughed at by certain people for using it, that he could hardly express himself at finding it adopted so successfully by Mr. Brunton. With regard to the question put as to trying in a piece, the way he did it was to try in on wax in the ordinary way, then put the piece on the model, cut away the wax from the front, and invest the front in plaster, and then remove the wax from the lingual side of the piece and fill up with plaster.

Mr. BRUNTON said that he had himself used the matrix very largely, both in amalgam and in gold work. He found that he could finish amalgam stopping at one operation by using a matrix made out of ribbon, with the ends turned over, so as to allow a common rubber dam clamp to grip the matrix and hold it tightly round the tooth while the stopping was being built up. He might say that he used amalgam cement—use it very dry, and mallet it in. (Mr. Brunton handed to the President a specimen of his clamp).

The PRESIDENT observed that Mr. Brunton's clamp seemed to be a very interesting one, beautifully made, and ingenious in design.

Mr. CUNNINGHAM said he certainly would join with the President in paying a meed of congratulation and admiration to Mr. Brunton for his very valuable invention. He thought it beat anything in the way of matrixes that he had seen, and he could see great possibilities in it. With regard to the use of the matrix, he could only say he should like to have heard further from Dr. Bogue. It was from one of his operations that the speaker got this idea of a vulcanite matrix, and he had felt grateful to him ever since. As far as he had brought the thing to day he could claim no originality, he had simply made use of advantages derived from visiting the dental establishments of his friends.

Mr. KEYS asked what was the benefit of coating the model with chloroform and rubber before packing. He had tried both ways. He had used chloroform and rubber as a solution, but had considered it rather a failure. The rubber if put on the model tight made a better fit, while the chloroform solution

of rubber was apt to make the piece rather porous on the palatal side.

Mr. BRUNTON: Occasionally I have had a little trouble in the application of rubber to the plaster model with chloroform solution, but only in cases where the solution was put on too thick. If it is thin enough to allow the chloroform to evaporate, then there is no trouble.

Mr. KEYS: There is no advantage that I can see. I have used the rubber with and without, and find the fit is quite as well without.

Mr. BRUNTON: Well, I consider there is an advantage in using the solution of chloroform on the model, inasmuch as you get the rubber plate to stick to the model. I don't think you could get a piece of warm rubber to stick to a model without some adhesive solution, especially in the way I treat models, that is, by giving them a coating of liquid silex before they are dry and before they receive the chloroform solution. I don't know that any reply is required to Mr. Balkwill's remarks further than to say that I was quite a stranger to Mr. Balkwill. I am much indebted to him for the idea, as it was from his book, as I said, that I got the idea in the first place. But without egotism, I may say I believe I have gone a little bit beyond Mr. Balkwill, inasmuch as I am able to do all the rubber work without flasks.

Mr. Moore: I was going to ask with reference to the colour of the rubber. Is it improved by this process?

Mr. BRUNTON: There is no improvement in the colour, and there is no deterioration. You can judge of the colour and quality by inspecting the pieces vulcanised in that way, which I have produced.

Mr. STORER BENNETT, F.R.C.S., &c., read a paper* on "The Attachment of the Teeth to the Alveolar Process," which he illustrated by a series of microscopic preparations. He reviewed the means adopted by nature for the attachment of teeth to the jaws, which were four in number—by attachment by ligament, by ankylosis, by means of a hinge, or by the implantation of a tooth in a socket. Each of these methods was carefully examined.

The last paper* was by Mr. P. LADMORE, L.D.S.I., and the subject was, "The Adaptation of Crowns to Molar and Bicuspid Teeth." The paper, which was read by the Secretary, described the process known as "grafting," or "pivoting," which consisted of enlarging the pulp cavity

* Read at the Annual Meeting of the British Dental Association, Plymouth, August 24th, 1883.

that existed in the tooth, and adroitly attaching the new crown to the root. Mr. Ladmore reported the result of extensive experiments in the endeavour to produce a crown for molars and bicusps that should have the combined good qualities of strength and durability with a natural appearance. He used thin platinum, glazing the crowns over with tooth material in the gum furnace. The process was succinctly described.

DEATH WHILST UNDER THE INFLUENCE OF NITROUS OXIDE.

By ANDREW CLARK, F.R.C.S.,
ASSISTANT SURGEON TO THE MIDDLESEX HOSPITAL.

It is very desirable that all cases of death whilst under the influence of an anæsthetic should be recorded, and brief particulars of the case given. Of these agents nitrous oxide is undoubtedly the safest, and in the many thousand times in which it has been administered there are but few untoward results attributable to it, directly or indirectly. The following case, however, appears to be one in which the gas was responsible for the patient's death. It was administered by a gentleman thoroughly accustomed to its use, and out of a bottle which had supplied gas to many other patients, so that there can be no doubt as to its purity and its being properly administered. W. B., a sailor, aged 59, and apparently a robust man, was admitted into the Middlesex Hospital on Aug. 21st of the present year, under my care, suffering from a general ulceration and induration of the tongue. It is unnecessary for me here to go into details of the case, suffice it to say, that under treatment the ulceration was improving, but the induration remained, and it was deemed desirable, previous to excising the organ, to remove several teeth. Accordingly, on Sept. 10th, the patient was sent to the Dental Hospital of London, where several teeth were extracted without an anæsthetic. He would not submit to more being removed in a similar way, so on Sept. the 15th, when he was again sent down to have two more extracted, nitrous oxide was administered in the usual way. The patient appeared to be taking it well, and nothing unusual occurred until the operation was about to be commenced, when something appeared wrong. The face-piece was instantly removed, and steps taken to revive the patient, but it was perfectly useless; he was quite dead. A *post-mortem* examination was made 49 hours after death, and from this it appeared that death was due to syncope. No visceral lesions were discovered except universal adhesion of the right lung, and the heart was perfectly empty.

British Journal of Dental Science.

LONDON, OCTOBER 1, 1883.

WE have watched the movement of Dental reform in France with great interest, and are now pleased to see success is likely to crown the efforts of those who have worked hard to obtain a proper status for the members of our profession across the channel.

One of the first to preach Dental reform in France was an old house-surgeon of the Dental Hospital of London—Dr. Mordaunt Stevens, of Paris—who published a series of articles in the “*Progrès Dentaire*,” a journal of which he was then the editor. Dr. Andrieu was at the same time working in the same good cause by sending petitions to the Senate of the Chamber of Deputies. But our Gallic *confrères* soon found that the best plan was to unite their forces, and a meeting was held, which resulted in the formation of the “*Société Syndicale Odontologique*.”

The promoters of the new society were perhaps at first rather severe, and would not allow advertisers or assistants to join their ranks. The result was that some of the members of the society, who found they were not appreciated at their own value by those they styled the aristocracy of the profession, started a new society, the “*Cercle des Dentistes*.” The “*Cercle des Dentistes*” opened a school under the auspices of Messrs. Duchesne, Pillette, Lecandez, Preterre, and others. Thanks to the liberal support of many members of the profession the school seems to have succeeded fairly well.

During this time the *Société Syndicale Odontologique* worked hard at Dental reform, and wearied the French Government with continual petitions for a Dental law, which we trust they will soon obtain.

The leaders of the *Société Syndicale Odontologique*, amongst which we count the well-known names of Drs. Andrieu,

Brasseur, Colignon, Gaillard, Mordaunt, Stevens, &c., have also decided on opening a Dental College, wherein Dental students can obtain a first-class special education which, we hope, will be certified some day by a State diploma. There is room and to spare in France for several Dental Colleges, and we wish our *confrères* all possible success. We congratulate them also on their Odontological Society. The papers read seem to be far above the average, and the discussions interesting. We note with pleasure that the members of the Odontological Society of France have refrained from taking notice of the coarse abuse vented upon them by some of their adversaries, who forget that fraternity and liberty should not be vain words in France.

A DENTIST began his advertisement with the solemn and truthful declaration, "I offer my services to all who are so unfortunate as to require them."

MANY persons have tried to solve the problem of how to sleep in a railway carriage, and have tossed about for hours in restless disappointment. Dr. Outten, a German physician, has applied the laws of physiology to the matter, and announces ("Allg. Central Zeitung") a satisfactory solution. If a person lies down with the feet toward the engine, the movement of the train tends to draw the blood from the brain towards the feet and cerebral anæmia is produced, and thence sleep. If he lies with his head nearer the locomotive (as is the custom in Germany), the movement of the train produces a cerebral hyperæmia incompatible with sweet repose. Dr. Outten has verified his views by many experiments. His directions are hardly needed in America, where the berths of sleeping cars are generally made up so that the position is as indicated by physiology and our German *confrère*. In this connexion, however, we would say that many persons are unaware of the fact that additional comfort and better sleep in travelling can often be obtained by judiciously using the bromides.

It is stated by a member of the S. S. White Manufacturing Company, that after an experience of many years in several of the largest Dental depôts in the country, he had observed that at least one third more left incisor and cuspid than the corresponding ones on the right side of the mouth, indicating that the natural anterior teeth upon the left side were lost more rapidly than those on the right. He said that sets of the six front teeth were continually broken up to supply this demand, and that dealers always had a quantity of the odd teeth left. We should like to know if the same thing existed in this country.

A RASH diagnosis was made by the dean of a medical college in America, not long since. He was consulted by a young lady who was suffering from an ulcerated condition of the gums, which was most marked round a particular tooth. The medical man diagnosed the case as one of cancer, and tried many remedies, but failed to give any relief. The young lady then consulted a Dentist, who removed the offending tooth, and the *cancer* got well of itself, without any further interference.

A LEARNED professor has devoted a year to the study and discovery of the adulterations in homeopathic medicines! When adulteration strikes the attenuated fabric of *sini, sine, curi*, materia medica, we may well believe that vice reaches every fibre of our social system.—*Medical Record*.

DR. DAVID, of Paris, read a paper at the twelfth session of the French Association for the advancement of Science, at Rouen, in which he maintained that adenoid vegetations which are so frequently developed in the naso-pharyngeal cavity of the infant, reveal themselves externally by a peculiar aspect of the face. The modification of the physiognomy consists essentially in deformity of the superior maxillary bone. The buccal portion of this bone becomes flattened transversely so that the dental arch does not keep its natural shape and dimensions; and the hard palate becomes high and narrow. Irregularity of the teeth follows, because they do

not alter, but the space for their accommodation is lessened. For the most part they tend to project in a mass forward, so that the lower lip may be partially hidden by the front upper teeth. This special conformation of the palatal arch has hitherto received different interpretations. An ethnological signification has been accorded it. Some regard it as a sign of superiority, others of inferiority of race.

THERE can be no doubt that under certain circumstances the sting of a wasp may prove very serious, or even dangerous to life. We do not hold that there can be no danger unless there be fear. It is quite possible that the sting of any insect capable of generating a poison may be fatal without the intervention of panic. The nervous system is in some of its states exceedingly susceptible of sudden impressions, which, as it were, "stagger" the nerve centres by shock. The bites of small serpents probably act in this way, and the sting of a wasp may prove fatal in the same fashion. As to remedies, ammonia is, of course, the obvious recourse; but almost anything "strong" in a popular sense, will generally suffice to decompose and destroy an organic poison if instantly applied. This is why the juice of an onion answers the purpose. Anything equally pungent would do as well.

THE following is a remarkable instance of fecundity, and is well authenticated. A lady of good position married at 16 years of age and died at 64. She had 39 children (all by the same husband, whom she survived): 32 daughters and 7 sons, and they were all single births, except two which were twins. All the children reached their majority.

SUICIDE is more common in Paris than in any other capital, relatively speaking. In the French metropolis, the ratio of suicides for every million of the inhabitants reaches yearly the high average of 402. The ratio for other cities is stated to be as follows: Stockholm, 354; Copenhagen, 305; Vienna, 287; Brussels, 271; Dresden, 240; St. Petersburg, 206; Florence, 180; Berlin, 170; New York, 144; Genoa, 135; London, 87; Rome, 74; Naples, 34.

Manipulative Miscellany.

All instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month; they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits, and without any intention or wish to put one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

L'OR CRISTALLISÉ ADHÉSIF, "LE MERVEILLEUX."

UNDER the above title, M. Minot, of Paris, has introduced a new form of adhesive gold for tooth filling. As its name implies it is a crystallised gold, having much the same spongy form as a preparation introduced many years ago as "sponge gold," from which however it differs in several important points. It is more fibrous than granular, and hence very tough, even in its spongy condition. If care be taken that it is not crushed or touched with the fingers, it may be torn with sharp pointed instruments into the smallest fragments, and if thoroughly dried, but not heated to redness, these particles become apparently perfectly united by simple pressure. With the little with which we have been able to experiment it is difficult to speak definitely, but a most noticeably important feature in its use is the little tendency it shows to "ball up"—a matter so annoying with most cohesive gold. This, and its extreme adhesiveness, enables it to be packed with great facility in angles, even without retaining points. It is better packed with serated pluggers, without square edges, which are capable of condensing it in any direction, and if only not burnished, piece by piece it can be built to any desired shape or size, and condensed into apparently a perfect plug with the mallet.

In colour it resembles gold when thrown down with the electric battery in the process of electro-gilding, but the moment it is burnished it appears as pure gold, or may be left with a dull surface from the water of Ayr stone, when it is remarkably non-observable.

We commend a trial by all, and shall be pleased to record the experience of any practitioners who will favour us with a report. To us, at present, it seems but to be known to be extensively appreciated.

RITCHIE'S NEW BEARINGS FOR LATHE HEAD.

IN last issue the above was noticed under an erroneously spelt name. It is invented and introduced by Mr. Josiah Ritchie, of Great Marlborough Street, W.

RITCHIE'S IMPROVEMENTS IN CHAIRS.

MR. JOSIAH RITCHIE, of Great Marlborough Street, has submitted to our notice a chair, handsomely got up in walnut wood, of his manufacture, after the "Owen" pattern, with an additional seat movement. A simple and effective contrivance working the seat independently of the back by means of a spring bolt, ratchet and segment, enabling the operator to place his patient in a reclining position without altering the position of the patient's knees or feet as hitherto in this description of chair. The movements are now: a rising and falling seat, a tilting and backward and forward movement, and a seat with upward and downward movement, acting independently of the back and other mechanical actions.

MR. W. GRAYSTON'S NON-ADHESIVE GOLD PLUGGERS.

MR. W. GRAYSTON, of Scarborough, has designed a set of five very useful pluggers for non-adhesive gold foil. They are of shapes and sizes adaptable to most cavities; but their chief feature is that with the exception of one they are finely serated on all sides, leaving a fluted surface on the gold as packed laterally, but have smooth points to enable the gold to be carried to the bottom of the cavity. The exceptional plugger is serated on the point as well, and can be used both for direct and lateral pressure or for condensing.

ASH'S ELECTRIC MOUTH ILLUMINATOR.

MESSRS. C. ASH AND SONS have introduced a new form of electric lamp for the mouth, which is also applicable for medical purposes. It consists of a handle, about six inches long, on which is a spiral coil of wire over which is a sliding ring, which controls the intensity of the light by being moved upwards or downwards. The lamp is an exceedingly small incandescent carbon, enclosed in a deep cup of ivory, which practically protects the patient from injury or inconvenience on account of the heat engendered. This little apparatus, which is sure to find favour when seen in action, is worked by a three cell bi-chromate battery. That this form of illuminating the mouth will ultimately come into general use there can be no doubt, the only difficulty is in finding the most convenient form of apparatus for applying it; and this of Messrs. Ash and Sons seems another step in the right direction.

Literary Notices and Selections.

THE ORIGIN AND GROWTH OF TEETH.*

By SALLIE STRASBURG, Cincinnati, O.

IN conformity with the custom requiring a thesis from candidates for graduation, I have prepared a paper, having for its subject the Origin and Growth of the Teeth.

Before I begin with my theme proper, being fully imbued with the seriousness of the subject, I pray, like that Homeric warrior, who, in the midst of battle, sent his oration to the Heathen Deity, Jupiter, that he send sunlight, so he be not compelled to fight in darkness. I likewise pray, may the light of science shine upon my path and enlighten me sufficiently to do justice to my subject.

I propose arranging the paper under the following heads:

- I. Mucous Membrane.
- II. Development of Enamel Organ.
- III. Development of Dental Bulb.
- IV. Development of Follicular Wall.
- V. Origin of Permanent Teeth.

* An Inaugural Thesis submitted to the Trustees and Faculty of the Ohio College of Dental Surgery for the Degree of Doctor of Dental Surgery, Feb. 26th, 1883.

MUCOUS MEMBRANES.

These membranes line internal passages and other cavities which open on the surface of the body as well as various recesses, sinuses and gland ducts, which open into such passages. They are habitually subject to the contact of foreign substances, introduced into the body, or of various excreted or secreted matter, and hence their surface is covered over and protected by mucous.

In structure these membranes are composed of three layers, the basement membrane, from which growth and metamorphosis take place externally, to form epidermis, while the same process takes place internally to form the dermis.

To avoid confusion, I will, throughout this paper, follow Dean's classification of the layers composing the mucous membrane as being the most simple and applicable to the skin as well as to the mucous membrane:

Epidermis,	{	Corneous.
		Malpighian.
Basement.		
Dermis,	{	Papillary.
		Reticullary.
Subdermis.		

The external layer, or *stratum corneum*, of the mucous membrane, unlike that of the skin, is permeable by various kinds of liquids, which, after passing through the epidermis and basement membrane, may be absorbed by vessels of the dermis.

The malpighian layer, which has larger oval nuclei and is destitute of a cell wall, constitutes the peripheral portion of the enamel organ which, during the course of development, will be known as the enamel membrane.

The basement membrane is of particular interest to the Dentist, since the dentine bulb and enamel organ will be found on opposite sides of it. In this situation it constitutes the *membrana præformativa*.—*Rashkow*.

The epidermal membrane, or epithelium, plays the most important part in the development of the teeth. The elements are derived from the external germinal layer—the corneous leaf or plate (Remak) or the epiblasts, the present accepted term. They are developed earlier in embryonal life than the mesoblasts of the intermediate layer, from which the dermis originates.

Prof. Wedl designates the mucous membrane an epithelial structure, and calls the enamel organ a follicle of mucous cells.

Dieser Schleimzellen-Schlauch wurde von Kolliker als Schmelzkeim bezeichnet.

It is known that at an early period of embryonal life, the maxillary arch of the lower jaw is destitute of the least trace of osseous tissue, but incloses within its component elements a symmetrical, cartilaginous band, which unites with its fellow at the median line; it not only extends the entire length of the maxillary arch, but to the frame of the tympanum, and terminates in the malleus.

This is Meckel's Cartilage, an organ which was first noticed and described in 1820, by the German anatomist whose name it bears. While playing only a transitory part in the development of the maxilla, it gives form and stability to the lower jaw. At the same period of evolution, the maxillary bourgeon of the upper jaw has united with the median, or inter-maxillary bourgeon.

This phenomenon takes place about the fortieth or forty-fifth day. We soon observe in the rounded part of the maxillary arch a bed of epithelial cells, forming a smooth ridge, which will afterward constitute the alveolar border. This epithelial ridge is added to the embryonal elements before they include any other tissue, except it be vessels, nerves, or muscle fibre, in process of evolution. Beneath this ridge a projection sinks into the subjacent elements, the outlines of which are in the shape of the letter V, with the apex slightly inclined toward the inner side. This structure was, for a long time, supposed to be cartilaginous in its nature, and was called *cartilago dentalis*, until Rashkow discovered its epithelial character.

Guillof, in 1859, named it the odontogenic part, or the generating part of the teeth. This process forms a continuous epithelial band the entire length of the alveolar border, and is found in parts that remain devoid of teeth as in the bar of solipeds.

"In 1839 there existed a wide-spread belief that rudimentary incisor teeth may be found in the embryonal jaws of ruminants. The theory was promulgated by Goodsir. This statement, founded upon certain anatomical appearances, was seized upon by Darwin Hækel, and other scientists, to sustain their views regarding changes that had taken place in successive generations of animal beings. This theory then received additional credit and fresh impulse, until it became the prevailing belief that the upper jaws of the fœtus of ruminants contain germs of teeth, which, however, disappear before, or soon after the birth of the animal."

This theory of Goodsir has been severely shaken by the researches of Dr. Pietkiewiez.

The epithelial band is simply a prolongation of the epithelial tegumentary layer of the mouth, which, sinking into the em-

bryonic tissue of the jaw, forms for itself a groove which it exactly fills. The band is composed of the same histological elements as the epithelial coat, or oral mucous membrane.

If the jaw is subjected to a prolonged maceration the band will become detached, but at no period of embryonal life can there be found a depression sinking, or perforation of the surface of the alveolar border, when in a normal condition.

The well-known theory of the evolution of the teeth advanced by Goodsir in 1837, and afterwards adopted by most authors, was founded on a certain mechanism which consisted in the formation of a follicular sac at the expense of an exterior depression of the oral mucous membrane, but as there is nothing in the normal state to warrant any such conclusion, the theory of Goodsir is considered without foundation. For a long time the theory of Goodsir was held to be correct, his verbal and pictorial representations were copied into our text books, both medical and dental. Even Kolliker borrowed from this author cuts illustrating this stage of evolution. Goodsir believed at an early period of foetal life there appears a continuous open groove running around the whole circumference of the jaw; and from the bottom of this groove there arose isolated papillæ, corresponding in number to the milk teeth. These papillæ become covered in by the deepening of the groove, and a meeting of its two edges over their tops, whilst, at the same time, their transverse septa are being formed, so that the several papillæ become enclosed in their separate follicles.

"This theory of Goodsir was attacked at a later date, in the works of the French histologists Guillot, Magitôt and Robin. According to the latter the tooth sacs or dental germs and remaining parts are developed, in the first instance, within the sub-mucous connective tissue, or sub-dermis, quite independent of epithelium or mucosus."—*Frey*.

THE EPITHELIAL LAMINA AND THE GENESIS OF THE ENAMEL ORGAN.

As soon as the epithelial band is completed it presents two faces, an external and internal. From the latter a process is given off which forms the epithelial lamina. This lamina is a continuous process extending the entire length of the epithelial band. It appears to be an inflexion of the band itself. The elements of the lamina are the same as those found in the band, polygonal cells inclosed by a layer of prismatic cells.

The first trace of the dental follicle originates from points on the free extremity of the lamina. They show themselves as small tubercles on the free margin of the lamina, arranged

at intervals corresponding in number and situation to the teeth that will be developed in the first dentition. These protuberances are the primitive bourgeons of the follicles. This bourgeon retains its connection with the lamina by means of a slender cord which gradually lengthens as the terminal mass increases in dimensions.

During the course of development this bourgeon constitutes the enamel organ, while the neck, in its progressive lengthening, only serves as a temporary band uniting it to the lamina.

The first appearance of the primitive bourgeon is spherical, composed of an external layer of prismatic cells (continuation of the lamina) inclosing a mass of polygonal cells. During the progress of evolution the elements inclosed in the prismatic investment undergo modification, and are transformed into stellate bodies, a phenomenon that never occurs in the cells of the cord of lamina. The difference in size of these cells and the change they experience seem sufficient to establish from this period a clear distinction between the constitution of the lamina and that of the bourgeon, which emanates from it. While the elements of the bourgeon undergo a series of important changes, those of the lamina retain their original appearance. The primitive bourgeon, which was at first spherical, becomes somewhat cylindrical, continuing in a horizontal direction, until considerably lengthened, when, by an abrupt inflection, it takes a vertical direction, and sinks into the depth of the jaw. The bourgeon thus extending its course, the cord requires a length which varies according to the species of animal, besides undergoing secondary inflections.

The primitive cord, in the course of its progress, presents the phenomena of lateral buddings in the shape of small rounded nodules, and shortly the form of varicosities which in their arrangement resemble an irregular chain. The bodies are composed exclusively of polyhedral cells, analogous to those contained in the cord itself. It is from these masses that, at a later period, numerous epithelial prolongations spring. After the cord has changed its course from a horizontal to a vertical direction, its extremity has become somewhat club-shaped, and still acquires greater dimensions. This results from a multiplication of the polyhedral cells, which compose most of its mass, and the prismatic cells that form the surrounding layer. The epithelial body thus occupying the deeper tissue of the jaw, becomes somewhat spherical in form. The upper portion corresponds to the point of connection with the cord, while the lower portion points toward the bottom of the lower jaw. This mass represents the *enamel organ* fully developed.

Shortly the lower portion takes the form of a concavity at

its lower extremity. The mass then assumes a shape resembling a hood, but still retaining its connection with the cord. This change of form coincides with the appearance of a new organ, the *dentine bulb*.

This originates at the inferior portion of the enamel organ. It first appears as an opaque point, but soon assumes a conical form, while its summit produces and occupies the corresponding depression in the enamel organ. This adaptation of the two organs continues throughout all their subsequent phases, the enamel organ covering the bulb, and exactly fitting its contours. No connection of tissue, however, exists at any stage of development. This has been proven beyond a doubt by dissections, maceration in coagulating liquids, and examination of sections.

This juxtaposition ceases at the base of the bulb, where the enamel organ turns back upon itself with a rounded border.

The composition of the enamel organ at this stage of development, about the fifteenth week or fourth month of the human embryo, has undergone notable modifications; the primitive polygonal cells, which composed the central mass, have been transformed into stellate bodies, which contain a nucleus in the centre surrounded by a granular mass.

The prismatic elements also undergo changes.

The stellate bodies occupy, at first, the centre of the enamel organ, while those polygonal cells near the periphery gradually become stellate as the dimensions of the organ increase.

These star-shaped bodies have their processes in the central part better defined than near the periphery, where they appear only rudimentary. These elements are immersed in a translucent, amorphous mass, coagulable in acids, having the appearance and consistency of the white of an egg. This amorphous substance, little by little, interposes itself between the polygonal cells, destroying their mutual contact. The result is the change of the polygonal cells to the stellate form.

"This theory of transformation differs from that given by Kolliker and other anatomists, who contend the primitive cells take the stellate form spontaneously. Legros and Magitot's opinion is in conformity with that of Waldeyer, who was the first to examine and describe this phenomenon; though Huxley, at a much earlier day, advanced the idea that the enamel organ had an epithelial origin, but did not indicate the *modus operandi* of the transformation of its elements, but said, the cells of the reticular portion were only metamorphosed epithelial cells. Formerly histologists believed these to be stellate connective tissue cells, but the peripheral layer was then, as now, admitted to be composed of epithelial cells."

The prismatic elements, during the early stage of evolution, remain the same in character on all parts of the periphery; but as soon as the dentinal bulb begins to make its appearance, a change takes place.

The prismatic cells on the concave surface of the enamel organ become lengthened while those of the convex surface decrease in size. This becomes more apparent during the progress of follicular evolution. The cells on the external surface disappear entirely before the complete atrophy of the enamel pulp, while those on the internal surface still remain for the functions assigned to them, the formation of the enamel organ.

The cells of the concave face of the enamel organ experience changes in form, besides increasing in length. Their extremities directed toward the centre of the enamel organ form slender processes which unite, or are continuous with filaments from surrounding cells, which constitute the portion of the enamel organ known as the *stratum intermedium*.

"This stratum may be termed the stratum of Hanover, he being the discoverer."

Prof. Tomes describes it thus: "The *stratum intermedium* consists of cells, intermediate in character, between those of the bordering epithelium and the stellate reticulum, they are branched but less conspicuously so than the stellate cells with which they are continuous on the one hand and on the other with the enamel cells. The function is questionable." Waldeyer believes that since the enamel cells may be frequently seen connected at their lower extremities with the cells of the stratum intermedium, a multiplication of enamel cells from the cells of this stratum in the direction of their length may be admitted to occur. This opinion is shared by Hertz and Hanover.

DENTINE BULB AND FOLLICULAR WALL.

I have previously mentioned that the enamel organ soon loses its spherical form and acquires that of a hood or cap, corresponding with the period of the appearance of the dentinal bulb. It first appears as a small opaque point in the embryonic tissue of the jaw, which corresponds in position to the depression in the enamel organ. "From the pouch-like expansion of the enamel germ, which upon its periphery is covered by the cells of the mucous layer, and in its central portions is occupied by extremely delicate nucleated elementary organs, rises a papilliform process of connective substance. This is the primary stage of the *dentinal germ*, and appears as a single papilla when it represents an incisor or canine

tooth, and an elevation with several cusp-like processes, when it represents a deciduous molar."—*Prof. Carl Wedl.*

At this early stage of development a vascular loop enters its substance similar to those found in the skin, but nerve fibres have not been discovered until it has attained a mammillated form. The bulb retains this form but a brief period,—it soon shows a tendency to take that of the future tooth. For the incisors and canines it assumes a conical form; for the molars, in man and carnivora, it is soon covered with protuberances, equal in number to the cusps of the future crown, whilst in the herbivora and rodents it throws out prolongations which represent the future divisions of the crown. In all these circumstances the enamel organ allows itself, so to speak, to be moulded by the dentinal bulb, so as to exactly conform to whatever shape the latter may assume.

Dr. Magitot maintains that the enamel organ is endowed with this influence.

These are his words: "The development of the Dental bulb which makes its appearance subsequently to the cord, is dependent as a physiological consequence, upon the presence and form of the enamel organ itself. One will, nevertheless, be tempted to believe that the nature of the future tooth is under control of the dentine papilla, a kind of organic mould upon which the calcific elements are grouped; but it must be remembered that the epithelial cord, which represents the future enamel organ, always precedes the appearance of the dentine papilla, which never originates till the cord has advanced a certain distance in its course. Accordingly, we believe that the epithelial cord not only decides the place of genesis, but the form of the corresponding tooth."

Dursy, according to Waldeyer, says: "The first germ of dentine appears in a dental sacculus, as a dark semilunar area at the bottom of the dental groove or enamel organ. At the same time, and continuous with the enamel, the dentine germ is developed along each half of the jaw. At certain points corresponding to the position of the future teeth the young structure develops in the form of papillæ, projecting against the enamel germ, while the remainder atrophies."

According to the teachings of Dursy, a dentine germ might be developed from any point of this semilunar area, which should be reached by the enamel organ. No particular point is assigned to the development of the dentine germ, that is entirely accidental and depends upon the course the enamel organ takes.

For example: If the epithelial cord of a cuspid should deviate from its normal course, so as to come in contact with this dentinal sheet of tissue, at a point between the bicuspid, the

cuspid would be developed between these two teeth. Whatever point in this tissue the enamel organ should reach, the future tooth would be a true cuspid. If this be admitted, the theory of Dr. Magitot must be true, that the enamel organ determines the form and character of the future tooth. If the teeth of certain fishes are destitute of enamel, Magitot's and Dursy's theory would be overthrown. The statement is from high authority that all teeth, whether clothed with enamel or not, are in the formative stage universally endowed with enamel organs. We may infer from such cases that the primitive enamel organ has performed its function when it has incited the development of the dentine germ, and determined its future form and character.

"There is a peculiarity in the structure of the external surface of the dental bulb; if a vertical section be made of the bulb, there will be found at the periphery a thin, clear zone, distinguishable from the subjacent tissue. Various anatomists have assigned important functions to this zone, it is a stratum of amorphous material, entirely devoid of anatomical elements and granulations. The stratum being transparent and somewhat denser than the subjacent tissue of the bulb, can at times be detached from the surface of the bulb. This fact led anatomists to believe that the bulb was invested by a distinct membrane." *Membrana performativa* of Rashkow.

It is in this structureless layer that the ivory cells or odontoblasts make their first appearance.

When the papilla has taken a hemispheric form, two opaque processes, originating at its base, ascend divergently upon its sides. They represent the first trace of the sac of the future follicle. At this period the processes are composed of the same elements as the bulb. While the bulb is developing, the processes increase in length, and bend toward each other in such a way as to finally embrace the dental bulb and enamel organ. By the gradual upward growth of these processes, the latter organs become finally enclosed and isolated.

Prof. Tomes, in his "Dental Anatomy," says: "From the base of the dentine bulb prolongations pass outward and slightly upward, so that they, in a measure, embrace the free edge of the enamel organ; and at a somewhat later period they grow upward till they fairly embrace the whole enamel organ."

Owen's "Odontography" tells us: "By the development of three or four lamellar processes, from opposite sides of the mouth of the follicle, and their mutual cohesion, the papilla is inclosed in a capsule."

Prof. Wedl, in his "Pathology of the Teeth," says: "The

dental germ proceeds from the floor of the dental sac which invests it and the enamel organ."

Kolliker says: "The dentine papilla arises from the bottom of the dental sac."

Although the last two authors do not describe the process of development, they certainly do not mean that the bulb arises from the floor or bottom of a formed sac, but upon the surface of a sheet of tissue, which latter forms the sac.

(To be continued.)

THE FAILURE OF FILLINGS.

By W. C. WARDLAW, M.D., D.D.S.

(Concluded from p. 884.)

Had this cavity been thoroughly prepared and properly filled with an indestructible material, the influence of the destructive element would have been limited. Do not say that the same predisposing causes continue to exist, and therefore the tooth is still liable to a recurrence of decay. These cavities begin at a defective point, about midway of the buccal side, and extend continuously therefrom backward and forward. If the influence were strong enough to start decay "*de novo*," why is it we never see it operating with the same power and simultaneously along the whole buccal line? or why does it never begin at the approximal angles and work toward the centre?

If now you will faithfully study your failures in the light of these suggestions, I think you will soon find where "incompatibility" lies. You may not at first be able to recognize what you are looking for, but gradually the truth will dawn upon you and you will be convinced. Thus I account for 75 per cent. of failures.

If, however, a cavity is carefully prepared according to my ideal, and is skilfully and solidly filled with gold, there exists still another great danger of failure. In the dressing-off of such a filling, particularly if it is in an inaccessible position, or for a nervous patient, or under a bad light, or if we are very tired, it is so easy to stop short of a perfect finish. We may not remove enough of the gold, may leave it too flush, may take off too much of the filling, may leave some thin overlapping edges to be roughened up, may not remove the file scratches, may comminute the margins of the cavity with our burnisher, or otherwise fail to get that smooth, even finish so essential to durability, where an excavator will glide from tooth to filling and from filling to tooth without the transition being perceptible to the sense of touch.

Particularly in amalgam fillings do we fail, from leaving attenuated edges, which are subsequently broken off, making a rough place for the beginning of decay.

Did you ever extract a tooth and find the filling finished-off to your ideal standard? I never have. To the unaided eye the imperfections are glaring enough, but examined with a magnifying-glass, the wonder becomes, not that so many fillings fail to save the tooth, but that any do succeed in doing so. Just consider it a short while and estimate the number of failures that may be accounted for in this way, which are attributed to frail teeth, chalky teeth, soft teeth, etc.

In conclusion, I repeat that a tooth properly filled upon scientific principles and left with suitable surroundings will resist chemical action more perfectly than in the first instance; and I take the position that ninety-five per cent. of the failures of filling are due to the deficiency of artistic skill upon the part of the operator.

Does your silence give consent to the charge, that you are not the first-class operators you have claimed to be?—*Southern Dental Journal*.

Dental News.

ROYAL COLLEGE OF SURGEONS' MUSEUM.

WE are requested by Mr. Alfred Coleman to state that Mr. W. L. Farnham, of Norwich, has forwarded some dental specimens for the above museum to him.

APPOINTMENT.

MR. ALEX. HERNE, of Cheetham, Manchester, has been appointed Hon. Dentist to the Clinical Hospital for Women and Children, Park Place, Cheetham Hill Road, Manchester.

VACANCIES.

DENTAL HOSPITAL, LEICESTER SQUARE.—Lecturer on Anatomy and Physiology to the above Institution. Applications on or before Oct. 7th, 1883, to the Dean, J. Francis Ken Underwood.

MANCHESTER DENTAL HOSPITAL.—Lecturers on Dental Surgery and Pathology, and Dental Anatomy and Physiology, to the above Institution. Applications to be made on or before Oct. 1st, 1883, to the Hon. Sec., Mr. Thomas North, 96, Bloomsbury, Oxford Road, Manchester.

Correspondence.

[We do not hold ourselves responsible for the opinions expressed by our
Correspondents.]

WE have received so many replies to the letter from "N. Z." that we can only afford space to give extracts from some of the most practical. All our correspondents praise the "New Mode Vulcanizer," yet condemn the instructions given for its use, by recommending others. Many, whilst expressing their appreciation of the apparatus and its results in their own hands, utterly fail to enlighten "N. Z." or others on the means by which they achieve them, or answer any of his pertinent questions.

MR. G. H. SNAPE, M.R.C.S., Liverpool, "Can readily understand how anyone entirely depending on the printed instructions might fail to realize the *true* value of the machine," and asks "N. Z." to consider that the chamber and boiler are distinct spaces, and until steam is admitted into the former it may be many degrees below the vulcanizing point, although the thermometer registers 320 degrees or more. And moreover, that when a cold investment is placed in the chamber it will be some time before it will be heated up to the vulcanizing point. But he does not say at what temperature or for how long a time he does vulcanize his cases, although he is so pleased with the machine that he considers it a *duty* to recommend its use.

MR. T. A. BIGGS, Glasgow, advises discarding the thermometer and using a steam gauge, giving degrees of heat also, instead. For celluloid he raises the temperature (by gauge), to 305°, keeps the flask at that for four hours, then introduces the celluloid blank, and in three minutes screws it half home; raises the temperature to 317°, and closes smartly, allowing about seven minutes; fastens and removes till cold, and says then will be seen "a piece of celluloid incomparably superior to that done by any other process." He suggests that "N. Z." does not state what rubber he uses, and although he considers "that no machine can turn out either celluloid or vulcanite to compare with the new mode," he unfortunately does not mention what rubber he himself finds best, or the temperature, the pressure, the time, or the conditions under which he vulcanizes it.

Messrs. COTTRELL & Co., Liverpool, say that the "New Mode" is so well known, and has so many admirers, that they "are not adverse to criticism on the subject," and offer to give "N. Z." any information; but we regret to say have not

favoured us with any of the details of manipulation for which "N. Z." pines.

From what we have heard we have little doubt that the "New Mode" can produce most excellent results when properly worked, but it is the practical details for *properly working* that are most needed, and if our correspondents would favour us with short descriptions of their various *modus operandi*, and the names of the materials they prefer, a very useful table of temperatures, times and pressures, might be compiled from them, benefitting all who do or may use the "New Mode Vulcanizer."

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 82, Mortimer Street, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
3. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
4. All communications relative to subscriptions and advertisements are to be addressed to the Publisher, Mr. J. P. Segg, 82, Mortimer Street, Regent Street, London, W.
5. The Journal will be supplied direct from the office on PREPAYMENT of subscriptions as under:

Twelve Months (post free) 14s. 0d.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skliros, 82, Mortimer Street, Regent Street, W. A single number sent on receipt of seven (penny) stamps.

ANSWERS TO CORRESPONDENTS.

- "Enquirer."—No. 1; No. No. 2; Most of the colonies are closed; but, possibly, not all yet.
- "The Truth."—Too long, and hardly suitable for publication. Swindlers will probably always exist. The colony is to be congratulated that Government License is required before Dentistry can be practised at the Cape.

Communications have been received from Messrs. Andrew Clark (London,) Minot (Paris), Alfred Coleman (Streatham), A. Hume (Manchester), H. Ryding (Limerick), F. D. Walker (Doncaster), F. Harvey (Surbiton), A. B. Verrier (Weymouth), Leslie Mausuel (Waterville), J. W. Coleman (Wrexham), J. Ritchie (London), Rutterford (London).

BOOKS AND PAPERS RECEIVED.

- "British Medical Journal," "Pharmaceutical Journal," "Independent Practitioner," "Zahntechnische Reform," "Centralblatt für Zahnheilkunde," "Deutsche Monatsschrift," "Le Progrès Dentaire," "L'Art Dentaire," "Civilization not the Cause of Tooth Decay," "Journal of the British Dental Association," "Ohio State Journal," "Gazette des Hôpitaux," "Dental Cosmos," "The New England Journal of Dentistry."

British Journal of Dental Science.

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CIVILIZATION NOT THE CAUSE OF TOOTH DECAY.*

By JOHN J. R. PATRICK, D.D.S., Belleville, Illinois.

GENTLEMEN: It is not too much to say that civilization, being a slow process of long and complex growth, can only be comprehended when studied through its entire range. The present cannot be properly understood without a knowledge of the past, and a knowledge of the whole is necessary to explain a part. Of late years the early history of a man is felt to be an attractive subject, and a feeling of eager curiosity can be traced through the writings of most men who may have occasion to speak of the relations of man, not only with all other living creatures, but also with that part of creation which is devoid of life and which contributes largely to his sustenance. I regret to say that the recent literature produced by our own profession is not far behind others in the belief that facts are only useful to illustrate theories; and it seems as if the great complexity of the question and of the conditions necessary to produce sound evidence, has had a tendency to beget acquiescence in that which is the most insufficient for scientific accuracy. There is a tendency to carry researches into the more abstruse questions connected with vitality, the nervous power, and the relations of mental and material phenomena; while such inquiries are justifiable in themselves, to be of scientific value they need to be treated with more than common caution as to testimony as well as the conclusions to be derived from them, yet it is here that such precautions are usually disregarded.

* Read before the Illinois State Dental Society, at their Eighteenth Annual Session.

At the late International Medical Congress, Dr. Norman Kingsley read a paper on civilization in its relation to the "Increasing Degeneracy of the Human Teeth," and attributed it to an increase of nervous diseases correlated to high civilization. Mr. Mummery, L.D.S., also read a paper on the subject of caries before the same congress, in which he is reported to have made the assertion, that "in the stone age caries and irregularities of the teeth of man were unknown, but as iron and other metal instruments, indicative of the increase of knowledge and art, came more and more into use, so did those diseases become apparent and increase in frequency." In a little work entitled, "Practical Information about the Teeth" recently published under the auspices of the Dental Society of the State of Wisconsin, I find the following remarkable passages :

"The Creator has provided everything to meet the wants of every part of the body, the bones and the teeth not excepted. The teeth of wild animals, of uncivilized tribes, and of all people who live in accordance with nature, are witnesses to this fact; and the teeth of domesticated animals and of nearly all *civilized nations*, or those beings who are living artificially, demonstrate their unnatural tendency to early loss. *Those nations who best observe the laws of nature enjoy the best physical development, the best teeth, and the highest mental power.* Thus, in Scotland, where great attention is paid to proper diet, and where the bone-producing elements in food are used most freely, there are fine teeth, healthy bodies, and high intellectual resources." *

Therefore, the conclusions arrived at by this author are, that wild animals and uncivilized tribes, together with those nations who enjoy high intellectual resources, bone-producing food, and exercise, have good teeth. That there may be no mistaking the author's meaning on this question, I will again quote from page 20, which says :

"The unpleasant fact is forced upon all thinking people, that the *modern manner* of living has interfered with the whole plan of nature and changed the whole course of life."

* In this connection the testimony of Robert Burns, Scotland's greatest bard, will not be out of place to show the existence of decayed and aching teeth in Scotland. Burns died in the year 1796, in his 38th year, and his

And on page 21:

"Whoever has seen ancient skulls, or looked into the

poem "Address to the Toothache," was written some ten years previous, soon after he had been tormented by that disorder:

ADDRESS TO THE TOOTHACHE.

My curse upon thy venom'd stang,
That shoots my tortur'd gums alang;
And thro' my lugs gies monie a twang
Wi' gnawing vengeance,
Tearing my nerves wi' bitter pang,
Like racking engines!

When fevers burn, or ague freezes,
Rheumatics gnaw, or colic squeezes,
Our neighbor's sympathy may ease us
Wi' pitying moan;
But thee—thou hell o' a' diseases,
Aye mocks our groan!

Adown my beard the slavers trickle!
I throw the wee stools o'er the mickle,
As round the fire the giglets keckle
To see me loup;
While raving mad, I wish a heckle
Were in their doup.

O' a' the num'rous human dools,
Ill har'sts, daft bargains, *cutty stools*,
Or worthy friends rak'd I' the mools,
Sad sight to see!
The tricks o' knaves, or fash o' fools,
Thou bear'st the gree.

Where'er that place be priests ca' hell,
Whence a' the tones o' mis'ry yell,
And ranked plagues their numbers tell
In dreadful raw,
Thou, Toothache, surely bear'st the be
Amang them a'!

O, thou grim mischief-making chiel,
That gars the notes of *discord* squeel,
Till daft mankind aft dance a reel
In gore a shoe-thick—
Gie a' the foes o' Scotland's weal
A towmond's toothache!

After cursing, describing and comparing the torments of an aching tooth, he concludes the poem in a fit of patriotism by calling on the devil ("Grim mischief-making chiel") to

"Give all the foes of Scotland's weal
A twelve-month's toothache!"

Now, when Burns penned this address he knew that his countrymen would not only understand, but fully appreciate it; for it is the duty of a poet "to hold the mirror up to nature," and no man performed that obligation more faithfully than Burns.

mouths of modern people who live according to nature, may have noticed the perfect condition of their teeth."

Now, therefore, Dr. Kingsley, Mr. Mummery, L.D.S., and Dr. Arthur Holbrook (the author of Practical Information), may be placed in the same category with a number of other doctors as the advocates of hypotheses which may be reduced to the following syllogism :

If we lived in a state of nature we would have good teeth
Savages or uncivilized tribes live in a state of nature,
Therefore savages have good teeth.

Now, if the major and minor propositions of this statement are correct, the conclusion must be inevitable. It will therefore be necessary to a proper understanding of the question to ascertain if possible what is the true signification of living in a state of nature, and this once understood, we will then be able to comprehend what is meant by living in a state of civilization.

If living in a state of nature means to be without all the artificial contrivances and conveniences which go to make up our present condition, then there is not a savage that has yet been discovered so low in the scale of humanity as to be truly said to be living in that natural condition, for the lowest savages yet known on the face of the earth have made some progress towards clothing or ornamenting themselves. No savage lives in harmony with the laws of nature; on the contrary, it is his ignorance of those laws that makes him a savage, and it is only in proportion as man understands his surroundings—understands the laws that govern his existence, and uses them to his advantage, *and in that proportion only*, does he become civilized. But the laws which govern nature are far from being understood, and it is a question that often arises—is it desirable to copy nature?

When nature does her work well, then, and only then can it be desirable. For there is a redundancy or an insufficiency in most things that nature does, material constantly getting into places where it is not needed, and leaving other places where it would be of service. Constantly exceeding the bounds of uniformity—a dead calm followed by a terrific cyclone, exceedingly hot or intensely cold, a terrible drouth and a deluge of rain, a season of plenty and a period of

famine. And this state of things exists, not only in the physical world, but in the region of thought. There are periods in history prolific in the production of great minds. The age of Elizabeth furnished the greatest poets, philosophers, and heroes the world has ever seen—Shakspeare, Massinger, Decker, Beaumont, Fletcher, Milton, Bacon and Raleigh; followed by a period of mental inactivity.

Our good old mother Nature, who is so constantly held up as a model of perfection, is full of impropriety, indecorum and looseness, combined with a fearful amount of strength to restrain her children, but she leaves them to do pretty much as they please, trusting to time and hard knocks among themselves to teach them wisdom, prudence, primness and propriety.

There is an eternity of the past for man as well as of the future; take all from him that he has acquired through the countless ages of his struggle for existence, and he would be naked and defenceless; unprovided with hair to cover his naked and tender skin, he could not move from place to place with any degree of comfort, but would have to confine himself to some warm portion of the globe. Even if he possessed the brains of a Newton, they would only serve to intensify his wretchedness, for he would still be a cowering helpless savage, feeding on the dead carcasses of fishes, reptiles, birds and quadrupeds, the leavings of other animals that were better provided by nature with fangs and talons to supply themselves with food. But the poet informs us that "God tempers the wind to the shorn lamb;" this is a beautiful sentence, but simply the negative of the true picture, for the lamb must be tempered to the blustering wind; universal laws do not change to accommodate individuals, the individuals must accommodate themselves to the laws or perish. That which is beautiful in poetry and attractive in fiction may be false in physics. Man has been defined as a cooking animal to distinguish him from all others; but there was a time in the history of man when he had not discovered the use of fire. He has also been defined as "an animal that works with tools," but there was a time in his history when he had no tools to work with; he had to make tools; tools are not natural productions. The progress from a natural

state to a more civilized condition has been very, very slow. Gourd husks and cocoa-nut shells were used long before the invention of pottery; bone and stone implements before bronze and iron; terms for the lower numerals before the higher—twos, fives and tens, before hundreds, thousands, and myriads. Man had to learn to count his fingers and toes before he could master abstractions.

Man receives all his impressions from the external world through his special senses, and nature has endowed the special senses of man with all that is necessary for a superior brutal existence; but the civilized or cultivated man, the man of scientific attainments, knows from long experience that they can not be trusted. A very slight thing affects them; a little congestion of the liver turns them into cheats; an undigested piece of beef distorts the vision; an under-done vegetable lodged in the stomach will disturb the brain and nervous function to such a degree that unsubstantial ghosts and hideous nightmares appear as most substantial truths; so, if *I* needed exact counsel, either in medicine or theology, I would first require to be informed of the condition of my counsellor's stomach. It is generally conceded that man, either savage or civilized, is a vertebrate animal provided with teeth, and whatever food his environment may compel him to use, his teeth are employed to prepare it for his stomach; and wherever man has been discovered he has been found to be in possession of these necessary organs, for the same reason that birds have feathers. I have never seen, in any of the works on natural history or travel that I have read, a statement to the contrary, and I have never heard the most zealous advocates of unbolted flour and graham bread—even at times when their culinary enthusiasm appeared to be boiling over while they were rearranging the modern pantry—say one word about a savage people becoming edentulous through neglecting to adopt their system of dietetics. Yet there are savages who are complete strangers to cereal plants, *and if such savages have good teeth*, it cannot be attributed to the use of cereal grains, either in a prepared or unprepared condition.

In this connection a few selections from the "Descriptive Sociology, or, Groups of Sociological Facts," classified and

arranged by Herbert Spencer, and from other sources, may throw some light on the value of dietetics :

“The Esquimaux are exclusively an animal-feeding people; their food consists of reindeer, musk-ox, walrus, seals, birds, and fishes.”—*Sir John Lubbock's “Pre-Historic Times,”* p. 428.

“Our journeys have taught us the wisdom of the Esquimaux appetite and there are few among us who do not relish a slice of raw blubber or a chunk of frozen walrus beef. In value it is far above the same weight of pemmican.”—*Dr. Kane's “Arctic Explorations,”* vol. ii., p. 15.

GREENLANDERS.—“The choice dish of the Greenlanders is the flesh of the reindeer, but as these animals have become very scarce they are indebted to the sea for their permanent sustenance, seals, fish, and sea-fowl. On the capture of a seal the wound is immediately stopped up, to preserve the blood, which is rolled into balls like force-meat. Parts of the seal are preserved under the grass in summer, and a whole seal is buried under the snow in winter. The flesh half-frozen and half-putrid is eaten by the Greenlanders with the keenest appetite and is called mi-ki-ak.”—*Simond's “Curiosities of Food,”* p. 32.

ICELANDERS.—“The diet of the Icelanders consists almost solely of animal food; fish, either fresh or dried, forms by far the largest proportion. During the summer they have milk and butter in considerable abundance, but of bread and every other vegetable food there is the utmost scarcity.”—*Mackenzies' “Travels in Iceland,”* p. 407.

SIBERIA, LOWER KOLYMA.—“Their food consists of fish or reindeer meat boiled, or fried in train-oil. As an occasional delicacy they have baked cakes of fish roe, or of dried and finely-pounded muksuns, which are the substitutes for meal. Bread is everywhere rare.”—*Wrangle's “Expedition to the Polar Sea,”* p. 74.

THE JAKUTS.—“Their food consists of beef and horseflesh, sour cow's milk and mare's milk. They boil their meat, but never roast or bake it, and bread is unknown among them. Fat is their greatest delicacy. They eat it in every possible shape—raw, melted, fresh, or spoilt. In general they regard quantity more than quality in their food. They prepare from

cow's milk what is called Jakut butter. It is more like a kind of cheese, or curd, and has a sourish taste; it is not very rich, and is a very good article of food eaten alone." (In fact it is schmierkäse.)—*Wrangle's "Expedition to the Polar Sea,"* p. 23.

NORTH AMERICAN INDIANS.—"The buffalo meat is the great staple and staff of life in this country (Mandans of the Upper Missouri), and seldom, if ever, fails to afford them an abundant and wholesome means of subsistence. They live exclusively on the flesh of these animals through every part of the year."—*Catlin's "North American Indians,"* vol. i., p. 122.

INDIAN TRIBES OF THE INTERIOR OF OREGON.—"They all prefer their meat putrid, and frequently keep it until it smells so strong as to be disgusting. Parts of the salmon they bury under ground for two or three months to putrefy, and the more it is decayed the greater delicacy they consider it."—*Wilk's "U. S. Exploring Expedition,"* vol. iv., p. 452.

MEXICO.—THE INDIANS OF NEW SPAIN.—"Those subject to the European domination generally attain to a pretty advanced age. As peaceable cultivators and inhabitants of villages, they are not exposed to the accidents attending the wandering life of the hunters and warriors of the Mississippi and the savannas of the Rio Gila. These people live on an almost entirely vegetable food, their maize and cereal gramina."—*Taylor's "Selections from Humboldt's Works relating to Mexico,"* p. 67.

"The usual food of the labouring classes throughout such States as I have visited, is the thin cake of crushed maize, named tortilla; and it is remarkable that, notwithstanding the great abundance of cattle in many places, the traveller can rarely obtain meat in the little huts which he finds on his road. A few fowls are at times to be seen wandering near the cottages, or some pigs rambling through the village, and the flesh of these creatures is only used to furnish a feast on holidays."—*Lyons's "Residence in Mexico,"* vol. ii., p. 244.

PAMPAS INDIANS.—"The Indians of whom I heard the most were those who inhabit the vast unknown plains of the pampas, and who are all horsemen, or rather pass their lives on horseback. The life they lead is singularly interesting.

In spite of the climate, which is burning hot in summer and freezing in winter, these brave men, who have never yet been subdued, are entirely naked, and have not even a covering for their heads. They live together in tribes, each of which is governed by a cacique; but they have no fixed place of residence. Where the pasture is good, there they are to be found until it is consumed by their horses. They have neither bread, fruit, nor vegetables, but they subsist entirely upon the flesh of their mares, 'and the ground is the bed on which, from their infancy, they have always slept.'—*Sir Francis Head's "Journeys Across the Pampas,"* p. 120.

GUACHOS.—“We find a people living between the twentieth and fortieth parallels of latitude, in the Argentine Republic, known as Guachos (half-white inhabitants of the pampas). They are a mixed race of Indian and Spanish blood, who are employed at the ranches or great cattle stations, and spend the greater part of their time on horseback, in hunting the half-wild cattle which roam over the grassy plains extending from the Atlantic coast to the foot of the Andes. These people live entirely on roast beef, with a little salt, scarcely ever tasting farinaceous or other vegetable food, and their sole beverage is maté, or Paraguay tea, without sugar.”—*Odontology Society Transactions*, vol. ii., New Series, p. 44.

THE NATIVES OF AUSTRALIA.—“Amongst the almost unlimited catalogue of edible articles used by the natives of Australia, the following may be classed as the chief: All salt and fresh water fish, and shell fish, of which in the large rivers there are vast numbers and many species; fresh water turtles, frogs of different kinds, rats and mice, lizards and most kinds of snakes and reptiles, grubs of all kinds, moths of several varieties, fungi and many sorts of roots, the leaves and tops of many plants, various kinds of fruits and berries, the bark from the roots of many trees and shrubs, the seeds of leguminous plants, gum from several species of acacia, different sorts of manna, honey from the native bee, and also from the flowers of banksia by soaking them in water, the tender leaves of the grass tree, the larvæ of insects, white ants, eggs of birds, many kinds of kangaroo, opossums, squirrels, sloths and wallabies, ducks, geese, cockatoos, parrots,

wild dogs and wambats," and, in fact, everything that he can strike with his boomerang or seize with his hands or teeth.—*Eyre's "Central Australia,"* vol. ii. p. 250.

NEW ZEALAND.—The food of the natives consists of sweet potatoes, aromatic berries, the pulp of the fern tree, the heart of a palm tree, and many different berries. Of animals they consume fishes, dogs, the indigenous rat, craw-fish, birds, and guanas. Fish, however, is the principal food of the inhabitants, and the roots of the fern are to the people what bread is to the inhabitants of Europe."—*Dieffenbach's "Travels in New Zealand,"* vol. ii., p. 17.

The natives of the Friendly Islands, of Otaheite, Feejee, Tanna (one of New Hebrides), New Caledonia, Island of Savu (between Australia and Java), and the inhabitants of the Sandwich Islands, all live on a mixed diet, varied only by the conditions which surround them.

(To be continued.)

CASE OF TUMOUR OF THE SOFT PALATE AND LIGATURE OF COMMON CAROTID.

ABSTRACTED FROM TWO CLINICAL LECTURES.

By Professor DUBRUEIL,

OF THE HOSPITAL ST. ELOI OF MONTPELLIER.

THE patient is a woman aged about 38, but appears older; the subject of well-marked scoliosis. Her left leg was amputated some time since on account of a compound fracture.

She came to the hospital about a fortnight ago, complaining of a swelling in the soft palate, which she had noticed growing for the last six months. The left half of the velum palati is occupied by a tumour, which reaches to the middle line, where it attains its greatest height, from thence gradually diminishing towards the side.

The most prominent portion measures about two centimetres from before back and involves the whole of the left half of the soft palate. The mucous membrane covering the tumour is of normal colour, and apparently not adherent to it. The swelling feels hard and resistant; neither fluctua-

tion nor pulsation can be detected in it. There is no glandular swelling and the general health is good.

The diagnosis, in the absence of any signs of aneurism or cancerous cachexia was that the tumour was most probably either an adenoma or a sarcoma, and Professor Dubrueil decided to remove it by incising the mucous membrane over the most prominent portion, then detaching the mass with the finger, and finally separating it from its adhesions or pedicle by means of Maisonneuve's *serre nœud*.

The section of the mucous membrane was easily effected, but on attempting to separate the tumour with the finger most fearful arterial hæmorrhage set in, the blood almost immediately filling the mouth and penetrating into the air passages. Dr. Dubrueil at once compressed the common carotid against the spine. This had the effect of reducing the hæmorrhage but not of stopping it altogether. So he immediately proceeded to tie the common carotid in its middle portion, his *chef de clinique* meanwhile compressing the artery just below its bifurcation.

The patient recovered after the administration of rum and the faradization of the phrenic nerve, and was then found to be aphonic.

The operation was performed at 11 a.m., and at 1.30 p.m. secondary hæmorrhage set in.

Professor Dubrueil then applied a second ligature to the common carotid one centimetre above the former one and also tied the superior thyroid and both the internal and external carotids, and applied antiseptic dressings.

Twenty drop doses of perchloride of iron, together with diffusible stimulants and small quantities of ice, were now administered.

On recovering consciousness the patient was found to be still aphonic, and very deaf, with the left pupil greatly contracted.

The temperature on the day of the operation was 36.2° C.; it reached 38.2° C. on the following day, but never afterwards rose above 37.5° C.

The pulse remained almost constant at 120, except on one occasion, when it fell to 104. The deafness disappeared on the ninth day after the operation. On the third day the

patient had a slight attack of congestion of the lungs, most marked on the left side, from which however she speedily recovered.

On the 6th of June two ligatures came away, and the temperature of the left side was now found to be two degrees centegrade lower than on the right. On the 9th three more ligatures separated.

The more superficial part of the tumour, which appeared through the incision in the mucous membrane, sloughed away a few days after the operation; the deeper portion apparently undergoing atrophy.

On the 9th of June, the day of the first lecture, the patient complained of violent pains in the left frontal region, irradiating over to the opposite side, and while Professor Dubrueil was concluding his remarks, he was informed that she had just been seized with hemiplegia on the left side, *i.e.*, the side of the ligature.

Both the left upper and lower limbs were in a state of perfect resolution; the face and tongue were deviated to the right. The pulse retained its former frequency, but was notably weaker. There was no loss of either sensation or consciousness.

On the 10th the patient was slightly convulsed, and the paralysed limbs were somewhat contracted.

From this day onwards, her condition got steadily worse, and she died comatose on the 12th, at noon. The temperature a few hours before death reached 40.4° C.

At the post mortem examination, the superior thyroid, the internal and external carotids were all found divided by the ligatures, and obliterated on the distal side by a clot; no coagula were found on the cardiac side. The common carotid was also completely divided, the peripheral extremity being quite filled by a clot. The lower ligature on the same vessel had also cut through it; no coagula were discovered, but most likely they had been removed during the process of opening the vessel.

The pneumogastric was found to have been included in the lower ligature; it was not divided, but greatly reduced in size and strangulated at the site of the ligature.

The left nerve, instead of following its usual course between

the internal jugular vein and the carotid artery to the outer side of the latter vessel, ran just anteriorly and to the inner side. The right nerve was in the normal position between the carotid and jugular.

On examining the tumour, a globular cavity with perfectly smooth walls and filled with a passive clot, nowhere adherent, was come upon at once. The cavity communicated directly with the internal carotid artery.

The tumour was evidently an aneurism of the internal carotid at a point on a level with the palate, which had destroyed the wall of the pharynx and gradually filled the velum.

Brain: Pia mater adherent on right side, not on left. Vessels of pia mater on right side gorged with blood. On the under surface of the right hemisphere was a hæmorrhagic foyer, over the inner two-thirds of the frontal lobe. The clot was found to involve the orbital and olfactory convolutions, and to extend backwards nearly to the optic thalamus and corpus striatum. Besides these lesions the anterior two-thirds of the right hemisphere were in a state of softening.

In his remarks on the case at the end of the *first lecture* (before the attack of hemiplegia), Professor Dubrueil pointed out the symptoms militating against the probability of the tumour being an aneurism, and ascribed the hæmorrhage to the section of some large vessels which must have crossed over the tumour.

The bleeding proceeded, no doubt, from some branch of the external carotid, and his reason for tying the common carotid instead of the external was the possibility of reaching the former vessel more rapidly, time being in the present case of the utmost importance. The ligature of the vessel was, strange to say, unattended by any sign of hemiplegia, syncope, delirium coma, or convulsions; symptoms so often met with after this operation. The left pupil was contracted, but there was no loss of vision.

The aphonia, heart trouble, and congestion of the lungs were most likely due to some contusion of the pneumo gastric nerve during the operation, and to the consequent neuritis.

At his *second lecture*, after giving the result of the autopsy, Dr. Dubrueil referred to the mistake which had been made

in the diagnosis. To his knowledge the case was quite unique, no instance of aneurism in the left palate having been hitherto recorded.

The vagus had been included in the ligature round the artery, and to this circumstance must be ascribed the symptoms of congestion of the lungs and the cardiac derangement.

The cause of this inclusion of the nerve was: first, its abnormal position in front of the artery; secondly, the hasty way in which the operation had to be performed. After passing Cooper's needle, Dr. Dubrueil carefully examined the ligature to see that there was nothing between it and the vessel on the outer side, but he had no time to examine the anterior and internal aspects. While the ligature was being tightened it was remarked that the patient was seized with a fit of coughing.

Death was undoubtedly due to the hæmorrhage and to the softening of the right side of the brain. Hemiplegia on the side of the ligature as in the present case was an exceedingly rare occurrence after the ligature of the carotid, and very difficult either to explain or to account for.

SOME POINTS IN ORAL SURGERY OF INTEREST TO THE GENERAL PRACTITIONER.*

BY GEORGE L. PARMELE, M.D., D.M.D.

I SHOULD much rather at this time be a silent listener to words of wisdom and instruction from those older in membership in this Society and profession than myself, and consequently better qualified to be one of your essayists at this our ninety-second annual convention; but as you have seen fit to detail me for this task I will not shirk it, as I should be pleased to do, but endeavour to present for your consideration a few ideas concerning the speciality I have adopted, which I hope may not be without interest to you.

Contrary to the prevailing idea, Dentistry is not of recent origin. The Egyptians had specialists in every department,

* Presented to the Ninety-second Annual Meeting of the Connecticut Medical Society, May 23rd, 1883.

and it is claimed that artificial dentures of wood, ivory, and gold have been found in the jaws of mummies. It has also been asserted that fillings of gold have been found in their teeth; but recent investigations by several English Dentists of high repute tend to throw discredit on this statement, and they incline to the belief that the teeth were only gilded, as often times were their faces, as a means of decoration. On the other hand, there is the authority of Sir Gardiner Wilkinson, who states that he has seen teeth filled with gold in the mouth of a mummy at Thebes, and the fact that Herodotus mentions the existence of both oculists and Dentists as specialists among the ancient Egyptians, makes the statement appear probable.

Hippocrates, 500 B.C., and Aristotle, 350 B.C., wrote largely on the teeth.

Celsus, 100 B.C., recommended the use of the file for removing the sharp edges of carious teeth.

Galen, A.D. 100, treated the subject more extensively than any ancient author.

Ætius, an Arabian, A.D. 300, discovered the apical foramen through which the nerves and vessels enter the dental pulp.

From this time until the latter part of the middle ages, the practice of this specialty, like that of surgery, fell into the hands of mechanics. But about the time of the revival of surgery some advances towards modern Dentistry were made. Among the writers of this period were such men as Fallopius, Eustachius, and Paré. Later came John Hunter, and others of his day. Dentistry in those days consisted mainly in the construction of artificial dentures, and was practised as an art by jewellers—as a century or two before rude surgery was performed by barbers.

During the eighteenth century the practice of the art began in America; but it was soon discovered that for the intelligent and successful treatment of the teeth some anatomical knowledge of these organs and the surrounding tissues was necessary, and the better class of those engaged in this calling began the study of their anatomy, physiology, and pathology, etc., and some medical men began to engage in the practice.

Societies were organized, journals and text-books published,

and about 1839 the first Dental college was established. American Dentists soon became acknowledged of superior skill the world over. At this time the almost universal remedy for nearly all diseased conditions of the teeth, except simple caries, was the forceps and the substitution of artificial teeth. Now, exposed and inflamed pulps are saved alive; abscessed teeth, atrophied sockets, and necrossed jaws, are successfully treated and saved; extraction, except in extreme cases, is considered malpractice.

Dental deformities are corrected; fractures of the maxillæ, diseased antra, and all abnormal conditions of the mouth, are considered as coming within the province of a thoroughly educated Dental and oral surgeon. Not only this, but by proper prophylactic measures in the young, impairment of these organs is, to a great extent, arrested.

But while scientific Dentistry has rapidly advanced, empiricism has not been idle, and it would be impossible to estimate the amount of injury inflicted by the quacks with which the country abounds.

The Society for the Prevention of Cruelty to Animals protests strongly against vivisections; for original investigations, would it not be better employed in waging war against the wholesale extraction and mutilation of the valuable organs under consideration?

¶ The importance of good teeth to mankind is greater than is appreciated by many. Like the eye, ear, tongue, and other special organs, they are designed for a life service, and their preservation contributes valuable service to the human economy, while their premature loss is of serious damage to the whole body.

In a late report of the Odontological Society of Great Britain, Edward Canton, F.R.S., gives a large number of cases of habitual constipation, with enormous accumulations of fæces in the descending colon, and distressing symptoms of all kinds, which were distinctly traceable to absence of, or a diseased condition of the teeth, to such an extent that mastication was not properly performed, and where treatment was without avail, until the masticatory apparatus was put in proper condition, when the constipation was cured. He says: "It is well known that imperfect mastication of food

is a common cause of diarrhœa; but few medical practitioners appear to be aware that habitual constipation is not unfrequently due to this cause. . . . It is, in fact, scarcely possible to exaggerate the importance of proper mastication of the food. It should be reduced by the teeth to a complete pulp, and unless so reduced the digestion is sure to be deranged, and general lowering of health will follow. The imperfectly digested mass, which passes through the pylorus, does not take up a proper amount of bile, nature's purgative, and the consequences which I have just been describing follow as a matter of course. I have said that imperfect mastication always causes more or less general impairment of nutrition; this is sometimes very marked. The patient continues for some time thin and weak, and at last falls an easy victim to any illness by which he may be attacked. In women this general low state of nutrition greatly predisposes to barrenness. A young lady was brought to me by her husband; she had been married for some time, but had no family. She was thin, 'nervous,' had no appetite, suffered from indigestion when she did eat, was restless at night, and had bad dreams. I asked her if she masticated her food properly, and she answered, 'Oh yes;' but on looking into her mouth, I found that her teeth were badly decayed. I recommended the supply of molar teeth; they were adopted, the lady got stout and strong, soon became pregnant, and eventually had several children. So marked was the improvement in her health, and so evident the connection between this and the subsequent pregnancies, that when the husband paid me an occasional visit, and I asked after his wife, he used to say, 'Oh, she is quite well, thank you, Mr. Canton, *she does not want any more teeth!*'"

(To be continued.)

DISCUSSION ON THE THEORY OF CARIES.

(Concluded from p. 918.)

Mr. SEWILL, in reply, said: Mr. President,—I shall try to make my remarks as general as possible, and I will be as brief as I can. First of all I would say that my remarks are very well represented indeed in the "Transactions." The

mistakes that have been pointed out are unimportant. The only thing I should wish to correct is an error that Mr. Coleman fell into. At the outset of his remarks he ascribed to me that I expressed an opinion that because caries was excited by external causes, therefore it could not be a disease.

The pith and point of my remarks was this—that caries is due to external agents, that the dental tissues are passive under those agents, that there is no pathological action, and therefore that caries, in the strict sense of the word, is not a disease. I could not possibly have uttered anything so absurd as that because a disease is excited by external causes therefore it has no pathology. If I had said that I should have ignored numerous diseases which are undoubtedly due to external agencies. My whole speech would be meaningless unless that point were clear.

Mr. HUTCHINSON: How ought this sentence to be read? "because it is very important to know what it ought to be:—“Could we be certain of the true nature of disease.” I think that is a very important point.

Mr. SEWILL: In my opening remarks I dwelt on the importance of the discussion, and I remarked that our treatment had been empirical hitherto—and that is very evident from the discussion to-night—and that we could not tell, if we were agreed as to the actual nature of the disease, what modification we should be led to in our treatment. I maintained that caries was due to external agents, and I held that the tissues were perfectly passive under those external agents; and I maintained that the incontrovertible facts which we possess prove that. The discussion to-night has gone off into details as to the exact changes which take place in the tissues, and which, in my statement, I said were not of extreme importance, but that probably more light will hereafter be thrown on the more minute changes which take place in the tissues. The point of importance is that we should not subscribe to the statements made in this room that the teeth act and react from constitutional causes, and that they are influenced by disease in the same manner as vascular tissues. It is quite certain that pathology must be based on anatomy and physiology, and if any apparent fact comes forward which is opposed to the established facts of anatomy and physiology

that fact must be put on one side, and cannot be accepted. I maintain that our knowledge of the structure of dentine and enamel, and our knowledge of anatomy and physiology, justify us in stating that it is impossible that those tissues can be the seat of anything which can be compared to pathological action, or vascular action, in any other tissues of the body. Mr. Coleman's speech has been mostly addressed to controvert my view. I am sorry he has been so brief, and I trust that next session he will come forward with a paper from the opposite point of view to mine. It will be very valuable because there is no one more able, or apparently more full of belief in this point of view, than he is. If he comes forward next session, and kindly explains to us how it is possible for pathological phenomena to occur, and to be reconcilable with what we know of the anatomy and physiology of these tissues, then I shall be almost inclined to subscribe to the truth of the vital theory of caries. Mr. Coleman proceeded to adopt Dr. Abbott's view. Dr. Abbott seems to imagine—and I speak with the greatest respect of Dr. Abbott, because any one who pursues scientific work deserves thanks and gratitude—that he sees in carious dentine the phenomena presented in inflammation of vascular structures. So far as I can understand his writings and microscopical drawings, which are not at all clear, he tries to depict corpuscles and inflammatory products in the dentine, such as we find in vascular tissues, during inflammation. If Mr. Coleman will explain how such a change is possible in the dentine, I shall subscribe to his theory. Dentine consists of a calcified matrix permeated by tubes not more than $\frac{1}{4500}$ th of an inch in diameter, which are filled by fibrillæ, and if he will explain how inflammatory corpuscles pass into the substance of dentine I shall be glad. He may, perhaps, allege that they are produced in the tissue, out of the elements of the dentine; I should like to have that explained. I maintain this, that when a statement like this is put forward, which is utterly opposed to our physiological knowledge, we are justified in rejecting it on *a priori* grounds. Then Mr. Coleman says that he has tested the saliva in various cases, and has found it not acid. We do not depend on the saliva alone for the acid which originates caries, and even if we fail to discover acid it would certainly only prove that our obser-

vation has not been complete. It would certainly never prove that a pathological action had originated in the enamel. Can we imagine that this dense, almost homogeneous structure, as hard as flint, and as compact, can be the seat of pathological action, or the seat of nutritive changes? If it be the seat of such changes, how are they brought about? If we go back to the formation of the enamel we find that this pulp begins to calcify after the dentinal pulp. It proceeds outwards from the surface of the dentine, the dentine having been previously calcified from the periphery towards the centre. When the enamel is calcified the vessels disappear and the enamel is covered with Nasmyth's membrane, which is derived from the same source as the cement. This calcareous structure, enamel, super-imposed on the dentine, not only gets, by some mysterious means, nutrition through the dentinal tubes, but the source of its nutrition is thus changed. It must first come from without, and then the dental pulp takes on the office, and passes its vital influence—the nature of which I should like explained—through the dentine, and sets up pathological changes in isolated spots on the enamel. I say, on physiological grounds, this theory is impossible, and we must reject it. This observation leads me to the same fact with regard to teeth decaying in course of some diseases. In such cases we must look for local causes, and if we do not find those causes we certainly cannot accept such an hypothesis as that the enamel at periods can become the seat of pathological action.

Mr. Coleman asks why the teeth do not decay over the whole surface. The reason is pointed out by Wedl—that even in teeth of apparently sound structure you find microscopical fissures, if not larger ones, in the enamel. These are sufficiently large to hold decomposing products, and it is only a question of time, and a question of the secretions of the mouth, to get solution. But even if we cannot find an explanation of decay in conditions of the secretions—and I believe we have found it—we must abandon the proposition which Mr. Coleman seems to support. Mr. Coleman also supports his argument by the fact that we have true caries in cementum. On *a priori* grounds I should argue that we might certainly have caries and inflammation in cementum, under favourable conditions. Cementum is bone, and there-

fore it is not astonishing at all. On similar grounds that ulceration and caries, as it occurs in bone, is possible in cementum, I think it can be demonstrated that this process is impossible in dentine.

With regard to the remarks as to the pulp. The pulp is a vascular and cellular structure which is subject to all the phenomena of inflammation. On the approach of decay, or the entrance of bacteria, which are proved to pass through the tubes when decay approaches, you have the phenomenon of inflammation in the pulp; but surely that is quite outside the question. It is an episode in the progress of caries. By caries we mean disintegration of enamel and dentine, and I think that the evidence we have is sufficient, backed by physiology and anatomy, to prove that caries consists of disintegration of enamel and dentine, due to external causes, and that enamel and dentine are passive. Mr. Milles's remarks are very valuable indeed, and especially for the confirmation which his and Mr. Underwood's investigations give to the observations that Wedl positively puts forth, and in which he is supported by Tomes, namely, that you get caries in dead teeth, and in hippopotamus ivory, which is practically identical with caries in the human teeth. That one fact alone is sufficient to establish my case. Mr. Moon's remarks go to explain some cases which seem doubtful at first. If teeth are rubbed together, and they rub down sufficient of the enamel to leave a rough surface, caries may originate. Then Mr. Hutchinson thinks that I stated that one ought not to fill the teeth of young children with hard fillings, because the dentine becomes hardened. I never made any such statement, either in my writings or speeches. I will not enter into the subject now, but if inflammation occurs in the pulp of young children's teeth it must be explained on other grounds. Then Mr. Hutchinson thinks that because the pulp calcifies that shows vital action in the enamel and dentine. I should like to have some further explanation of how that is. Of course dentine conducts heat and cold, and it conducts organisms, and you get irritation with changes of temperature. All is explicable without imagining that the dentine is showing pathological action. Dr. Kingsley's remarks, with regard to retrograde metamorphosis, fall within the category

of "impressions" spoken of by Mr. Charles Tomes. I do not think they need any answer at all. Mr. Coleman dwells upon the grinding down of the teeth and the spontaneous cure of caries. Some of these individual cases may be rather puzzling, but because they are a little puzzling we need not fly to an hypothesis which cannot be believed to explain them. Very often in these cases the surface of the teeth is exceedingly badly made—the defects are structural—a point I dwelt upon in my opening speech. Few people's teeth are free from structural defects, and some mouths are full of teeth which are very ill-constructed from end to end, and in those cases you get a grinding down of the ill-made surface until, better made tissues being reached, this becomes polished by mastication. I think that is a simple explanation which is quite as good as imagining that some vital process is going on. Mr. Charters White rather surprised me by alluding to the "zone of calcification" as a vital phenomenon. I thought that was entirely given up. I think the only one who believes that "zone of calcification" is a vital phenomenon is Dr. Magitôt, but his work is many years old, and so many persons have proved that the same thing is found in teeth decalcified by acid out of the mouth, and in dead teeth in the mouth, that I thought the idea that this zone means solidification of the tubules was quite abandoned: it means slow solution of the dentine by acid. In conclusion, I may say I trust that this discussion will be revived in another form next session, because as long as the question remains unsettled it affords intellectual amusement of the best kind to discuss such a subject. I am much obliged to you for the patience with which my observations have been listened to.

FLUXION DENTAIRE.

By Dr. MAGITÔT, of Paris.

(Continued from p. 915.)

In those cases in which the inflammation extends towards the skin, it is on account of the passage of the inflammation to the periosteum covering the maxilla that the cellular tissue of the face becomes invaded by direct contiguity.

It is then dependent upon the severity of the initial lesion

whether there be an œdematous *fluxion* or an acute phlegmon of the face. We, however, shall not pursue the first form, but shall follow through the different varieties which the second presents.

The cellular tissue of the skin being attacked, and a *fluxion* produced, the focus of action is always found in the point of passage through the alveolus, still the special looseness of the connective tissue in this region, and its communications with layers of the adjacent cellular tissue, rapidly involves them in a very considerable swelling. In the case of a *fluxion* being due to a lesion of the superior maxilla, it extends to the tissues of the eyelids and temporal region. If the lesion be traceable to periostitis of a canine or incisor tooth, the seat of swelling may lie in the canine fossa and corresponding side of the nose. When the lower jaw is affected, the swelling extends to the neck below the inferior border of the jaw and region below the hyoid bone, almost down to the clavicle and sternum. In all such cases, the face is much disfigured. The swelling is hard, unyielding, and characterized by its intensity, together with symptoms of grave constitutional disturbance. The lesion consists essentially in the separation, by inflammatory action, of the periosteum from the maxilla, it becoming raised from the jaw by the formation of a focus of pus.

The abscess which is, under these circumstances, an almost inevitable result, will have for its walls on the one side the bared surface of the maxilla, and on the other the deep surface of the periosteum, lined by the congested and thickened tissue which constitutes the *fluxion*. This, then, is the phlegmon limited to the face.

A simple suppurative *fluxion* forms yet a more severe malady than the œdematous *fluxion*, which ends in simple resolution. But the subperiosteal abscesses of the lower jaw do not necessarily open through the skin, indeed such a termination is decidedly the least frequent, for by its detachment and elevation the periosteum of the bone usually forms at the bottom of the vestibule of the mouth a projection due to a swelling, and on account of the small amount of the resistance of the tissues, thinning takes place, and finally a spontaneous opening into the mouth. Direct exploration of the focus of inflammation by the

finger, or a sound, reveals a surface of bone bared to a variable extent. This exposure of bone does not possess in all cases that importance or gravity which one is tempted to attribute to it. If it does not go beyond a few centimeters of surface, and if the sufferer be not a person of markedly unhealthy tendency, no necrosis, even of the superficial shell of bone, will take place; the tissues will rapidly recover themselves and undergo repair, and if the originating cause be vigorously treated or removed, no deep-seated thickening will remain, which is so often the cause of an acute relapse of the *fluxion*.

It is this phlegmonous variety which, when it starts in the lower jaw, is often accompanied by the phenomenon of muscular contracture, whereby the mouth becomes rigidly closed. This occurrence varies in proportion to the intensity of the inflammatory process. It is not ordinarily either complete or very formidable in the common phlegmonous *fluxion*, and it ceases as soon as the collection of pus has made an opening for its outward escape. But it may become a truly serious matter, either on account of its extreme degree or of those complications which it presents for treatment, and which we shall point out under the title of *diffuse phlegmon* of the face.

This last variety presents at its commencement the usual phenomena, and only this inflammation has that degree of severity which is met with elsewhere in severe lesions affecting the teeth and alveolar borders, and among those patients who are predisposed. The *fluxion* reveals all the characteristics of phlegmon in general. The bone is very extensively stripped, the collection of pus is found not only over the surface of the periosteum, but also in the muscular and aponeurotic planes, and invading the subcutaneous cellular tissues, suffuses itself in them to a considerable extent. The strangulation to which the tissues are subjected leads to their gangrene. Osteitis and necrosis are inevitable. It is particularly in severe affections of the wisdom teeth that this variety of *fluxion* is met with, and these cases are further complicated by an almost complete contracture of the jaw muscles.

Under circumstances of this kind, and when no energetic treatment has been undertaken, the most severe troubles and even mortal complications may supervene. An osteitis and necrosis generalised to the whole of one side of the jaw may

take place, or collections of pus which we have seen to extend almost to the temporal fossa, in the upper part of the neck in the neighbourhood of the clavicle and episternal notch, and considerable losses of substance, with irreparable deformity in the bones, or even death itself, may occur.

In summing up the history of the processes of the *fluxion* we find it in three forms: simple œdema, which terminates by resolution; circumscribed phlegmon, of medium severity; diffuse phlegmon, of extreme gravity. Still let us add that these three conditions, or more properly speaking these three phases of development of the same lesion, may be produced in sequence and regularly, or one form may exist quite by itself from the very first. This peculiarity is well seen in the last kind, the diffuse phlegmon, which may appear quite suddenly, and from the very first reveal all its malignity and formidable character.

(To be continued.)

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„ Peacock, Scarboro' . . .	1	1	0
„ Wetzel, Vevey . . .	1	0	0
„ Comer, Torquay . . .	10	10	0
„ Kingsley, Paris . . .	2	0	0
„ Sylvester, Berlin . . .	1	0	0
„ Williamson, Dundee . . .	5	5	0
„ Waite, Liverpool . . .	1	1	0
„ Jenkins, Dresden . . .	1	1	0
„ Fothergill, Darlington . . .	1	1	0
„ Crane, Paris . . .	2	0	0
„ Kutz, London . . .	5	0	0
„ Walker, London . . .	5	5	0
„ Young, Leipsig . . .	0	19	7
„ Rogers, London . . .	2	2	0
„ Field, London . . .	5	0	0
	£56	7	7

British Journal of Dental Science.

LONDON, OCTOBER 15, 1883.

THE number of Dental students attached to the London Hospitals is now-a-days an important factor in the roll list of our schools. Amongst these the Middlesex has always been one of the foremost in its endeavours to meet the requirements of the Dental student, and we notice with surprise a letter in one of our contemporaries, stating that the Medical students affect to look down on the Dental with contempt, speaking of them as "those — Dentals." The letter further goes on to intimate that the authorities do not treat Dental students on the same footing of equality as Medical, and in assigning parts for dissection, the former are constantly being superseded by the latter. From our knowledge of teachers and students at the Middlesex Hospital, we venture to assert that the above statements are untrue, and we doubt not that some notice will be taken of these aspersions.

The Dental profession, although but a branch of a still larger growth, represented by the great body of medical and surgical practitioners, is yet so closely and intimately interwoven with both medicine and surgery, that a sound knowledge of the sister arts is now-a-days recognized as essential to its successful practice. Indeed, many Dental practitioners are so strongly impressed with the great advantages of this wider knowledge as a groundwork for their more special work, that they frequently obtain a recognized qualification other than the L.D.S. before entering upon their work. Several of the hospitals, including the Middlesex, have recently, and, in our opinion, this is a very wise step, so arranged the plan of work for their Dental students in the dissecting-room, that, whilst it does not unduly encroach upon the time required for their more special studies, yet gives every encouragement

to the acquisition of a general as well as a more special knowledge of anatomy; so that should any student wish to add the qualification of M.R.C.S.Eng. to his name, his work in the dissecting-room will have fully covered the requirements of the college.

We would urge all Dental students to make the best use of the dissecting-room, to have an eye to the growing advantages of a general as well as a special qualification, and to remember that the extra anatomical and physiological knowledge necessary for a Surgical Diploma is best and most easily gained during the early years of their studentship. And not only is a good groundwork necessary, but a general knowledge of Surgery, and specially the surgical diseases of the mouth and face, is an absolute necessity for every practitioner of Dentistry, independently of legal qualifications. And we would further urge upon those who are now fulfilling their hospital curriculum the importance of taking advantage of the opportunities they have of studying disease in the wards and out-patient rooms of the general hospitals. How often will they be consulted for ulceration about the mouth, or for swellings about the face, and it will be for them to determine if the removal of a tooth will, in the first instance, be the means of curing the ulceration, or, in the latter, of letting out some pent-up matter, or whether it is necessary to resort to medical or surgical treatment.

“ALCOHOL, A FOOD OR A POISON?”—This question has to be considered so often that one welcomes any attempt which may be made to remove stumbling-blocks out of our way. Like all drugs, alcohol presents different physiological action, according as it is taken in small doses frequently, or in large (toxic ?) doses once or twice in 24 hours. It cannot be insisted on too often, that dilution plays a most important part in determining the results which accrue from the imbibition of certain drugs. And it has to be remembered that we take our alcohol cooked, as beer, as wine, as brandy; and the process of “cooking” adds ethers and other volatile empyreumatic bodies which have a very important bearing on the

utility of the alcohol. It is a point of interest that, as is shown by the returns of the French pavement-tax, a tax levied upon food which has been transported in the French cities, the consumption of bread varies inversely as that of wine. Without relying too much on their statistics one cannot help seeing that they corroborate the results arrived at by Bouchardat, Sandras, and Duchek. The latest researches seem to show that little or no alcohol escapes by the urine, although Deprè shows that the skin and lungs can eliminate a certain proportion. What then becomes of the alcohol? We know that 1 kilo of alcohol yields 7000 heat-units, and hence, if it is burnt in the tissues, it can replace $\frac{3}{4}$ kilo of fat besides stimulating the oxidation processes of the organism. That it is not a health food, however, is shown by two facts: the one is that nervous prostration, narcosis, supervenes when the alcohol is pushed to an extent requisite for the supply of caloric necessary for the economy; while the second is that such narcosis is delayed in pyrexia. Alcohol then, in small oft-repeated doses, is a food-medicine which supplies a want of the system when every-day foods fail; and alcohol is a deadly and insidious poison where its ingestion is not guided by the skilled hand upon the pulse. It appears then to be a provisional food and to save carbohydrate consumption.

Tobacco has been credited, indirectly it is true, with causing epithelioma through the instrumentality of "the vicious pipe," but Dr. Harper, an American Dentist, finds tobacco directly injurious to the teeth. He tells us his experience goes to prove (1) that recession of the gums takes place; while (2) the gritty particles so act upon the grinding surface of the teeth and cause wearing away of the structure. There is a chronic gingivitis—very chronic it would seem, as Dr. Harper finds fifteen years in most cases elapse ere the "lethal weed" exerts its influence. It would be interesting if Dentists would note cases which seem to owe their dental disabilities to the tobacco-habit—especially tobacco chewing.

WHERE DOES THE GOLD GO TO!—The world has been harrowed for many years by that pregnant question, "What

becomes of those countless pins which are dropped every day?" An ingenious critic of Dental doings now asks what is to be done when gold fails us? He calculates one two hundredth of the total gold supply of the world is put into the human jaw every year. At the best all known gold fields will have become exhausted within thirty years—*et puis?* This gold is buried, and so lost, and in the losing we wilfully fling away the work of two thousand men for one whole year. This is if we estimate an ounce of gold as the price of a mechanic's labour for ten days. Well may Niobe weep o'er her children!

OF course the moral which this points is, gold work, skilled professional labour, should be charged for more highly. This is so, but when we see how keen is the competition and how even in professional circles polite underselling is in vogue, it becomes a *crux* who is to start a professional tariff likely to be adhered to, and further likely to meet the requirements of the profession and the laity.

It is unfortunate that any hospital should be obliged to close its doors on the sick. The Adamson Hospital, Ceres, Fifeshire, has been forced to do this on account of want of funds. There seems reason for believing some want of discretion in the original building site has in some way helped about this untoward result. Surely thrifty Scotland ought to be able to support her charities.

THE Bufalini Prize—so called after a late esteemed Minister of Public Instruction in Italy, is to be competed for at the end of 1884. The subject which has been chosen is, "The Application of the Experimental Methods to Science," and Essays are to be addressed to the Secretary of the Medical Faculty of Florence, before Oct. 1st, 1884.

WITHOUT attempting to offer a criticism upon the volume before us, we may inform those of our readers whose avocations render reading foreign journals impossible, that in "L'Année Medicale" they will find abstracts of nearly everything

of note which has been done in the medical world during the past year. Although not a Dental publication it treats of many matters more or less important to Dentists.

THE following mems. are noteworthy as illustrating that "it is not so much *the drug* which cures as the way in which you give it:"—Croton chloral, usually given in large doses in the treatment of neuralgia, is undoubtedly one of the best remedies we possess. It, however, besides having a nauseous taste, is liable to upset the stomach. If, however, we exhibit it in grain doses, repeated hourly, we obtain an even more marked result and no nausea.

GELSEMIUM, in doses of three minims of the tincture given every half hour, will control even the most severe and obstinate facial neuralgias.

A CLERK at the Northampton Gas Works, before leaving the works a few days since, being thirsty, drank a quantity of soda water from a bottle, and was taken ill and conveyed home. He continued ill for 26 hours and then expired. A post-mortem examination of the body disclosed acute inflammation of the bowels, the cause of which was found in a small opening in the intestine, close to the stomach, at the side of an old ulcer, which had been covered by a thin membrane, and had, it was supposed, given way under the distension caused by the soda-water.

CARBOLIC ACID is now used in the treatment of ingrowing toe-nails. If the flesh has fully embedded the edges of the nail, and the tissue about it is hypertrophied, paring or cutting seem only to aggravate the matter. This being so, if you drop a little pure carbolic acid along the border of the inflamed tissue, and let it soak down beneath the nail, the pain ceases, and a healthy slough remains on the surface. If now the nail is filed or scraped down in the centre as far back as the root, or cut, *not along the edges*, the growth of the nail is directed towards the middle and a complete cure will be effected.

Manipulative Miscellany.

All instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month; they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits, and without any intention or wish to put one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

CAMPBELL'S NEW PATTERN NEW MODE FLASKS.

MESSRS. COTTRELL AND Co., Liverpool, have favoured us with samples of the above flasks, designed both for celluloid and rubber; the only difference being that those for rubber have a box bottom, whilst those for celluloid have the bottom in two pieces, to facilitate the removal of the plaster after cooking.

The flask is somewhat of the ordinary form, opening in two parts, the lid having a projection in the front, and a lappet at the back, hanging down over the flask, and having a circular hole through it. After filling a flask, this lid is merely slid on, when its projection fits into a hole in the flask made to receive it; a corresponding projection on the back of the flask fits into the lappet, and it is at once a fixture. But the chief ingenuity is centered in the "guide pins," which are most simple and effective in themselves, although most difficult to describe clearly. There are two, one on each side of the flask, nearly half-an-inch in diameter, and cylindrical from the top to an eighth of an inch below the upper half of the flask, into which they are fitted firmly, but capable of being rotated in their sockets—the head being cut like a screw head—thus when the two halves of the flask are home they must necessarily be exactly *in situ*. Below the eighth inch of circular fitting part they are tapered off to a point, not to their centres, but to one extreme periphery. By adjusting in any desired position the flask, instead of closing perpendicularly, is made to slide backwards, forwards, or

sideways at will, to accommodate itself to any undercut or irregularity of the model without injuring it—a most important feature in using celluloid blanks. These “guide-pins” have holes drilled through them just under the guide of the lower half of the flask when closed, into which pins can be forced, thus securing the flask while it is removed from the “New Mode Vulcanizer” and cooled.

CONTINUOUS GUM FACINGS AND WORK.

MR. VERRIER, of Weymouth, in continuing to improve his appliances to facilitate the manipulation of this delicate work, has designed and brought out a gas annealing frame, to act as an adjunct to his little double gas furnace, beside which it is to be fixed. It is in the form of an iron bracket, arranged with three independent Bunsen-burners, fitted beneath three fittings to support as many muffles. With its aid as many as five or six cases can be manipulated at the same time, as they may be worked in separate muffles, and in all stages of gradually heating up preparatory to firing or cooling down after that process. When it is remembered that gradual alteration of temperature produces the strongest results, and that each piece of work requires several firings to complete it, the advantages of this addition to his already handy little apparatus will be readily understood.

Literary Notices and Selections.

THE ORIGIN AND GROWTH OF TEETH.

By SALLIE STRASBURG, Cincinnati, O.

(Continued from p. 945.)

Soon after the cord becomes severed by the absorption of its elements, resulting in a cessation of continuity due to the compression or strangulation it undergoes from the encroaching walls, which now unite at this point and completely enclose the follicle. The enamel organ having lost its connection with the epithelial lamina, the dentinal follicle is definitely completed.

The wall or sac, composed in its primitive stage of embryoplastic elements, gradually assumes that of a laminated membrane, which may be separated from the adjacent tissue, except at the base of the bulb, to which it is firmly fixed.

Kolliker and most other authors describe the sac composed of two concentric lamina, and also admit, with Huxley, that the transparent stratum which clothes the bulb reflects back on itself and lines the inner surface of the follicular wall.

At the period now arrived the follicle is completed and closed. It is composed, beginning from the outside inward, of the follicular wall, enamel organ, and dentine bulb, and no other substance finds place within these walls. The enamel organ fills all the space between the sac and the bulb, and terminates at the base of the sac in a rounded extremity which forms the division between the prismatic cells of its convex and concave surfaces.

While the cells of the concave surface are now called upon to perform their physiological function, those of the convex surface atrophy rapidly and disappear.

“Waldeyer and Hertz believe this external layer of the enamel organ, instead of being absorbed, to finally become the *cuticula dentis*.”—*Nasmyth's Membrane*.

If the crown of a tooth be subjected to the action of hydrochloric acid for about 24 hours the delicate membrane first observed by Nasmyth will be detached. The membrane is smooth upon its exposed surface; while the internal surface is connected with the enamel fibres, between the rows of which it sends processes, and it presents in many places an impression as if it were of the contiguous portion of the rows of the enamel prisms.

According to Kolliker, the cuticle of the enamel is considered to originate in the following manner: that an additional coherent layer is secreted by the enamel cells, after the completion of the formation of the enamel, to serve as a protection for the whole.

Waldeyer regards it as the product of cornification of cells.

Prof. Tomes and Wedl hold the opinion that the membrane belongs to the cement, because it is continuous from the crown upon the cement, as may be demonstrated on teeth which have been treated with hydrochloric acid. Moreover, the mem-

brane is thickened in the depressions upon the crowns of molars, and in these localities distinct bone corpuscles likewise occur.

(To be continued.)

EXTRACTION OF DECIDUOUS TEETH.*

By N. W. KINGSLEY, D.D.S., New York.

QUITE recently there have appeared in the reports of papers and discussions before Dental societies, opinions expressed upon the extraction of the deciduous teeth which are so much at variance with the author's experience and observations, that he ventures to put his views in the form of an essay.

The views which he deems erroneous have shown a misconception of the order in which the temporary teeth are shed and their places supplied by permanent ones, and also in the idea which has been entertained that the premature removal of the deciduous teeth caused a shrinkage of the jaw, and created an irregularity in the permanent dental arch.

It would hardly seem possible, in view of the researches of the last quarter of a century, that any educated Dentist could hold any other than one opinion, or that it would be necessary at this time to correct any erroneous impressions. Two or three illustrations will serve to show the errors alluded to.

A gentleman of well known eminence in the profession was describing before one of the societies his method of caring for children's teeth, when he said among other things, "that as soon as there was any evidence of the eruption of a permanent tooth he removed the deciduous tooth to give it room. Beginning with the central incisors, which were the first to make their appearance, if the removal of the centrals did not promise ample room for their successors then he also took out the lateral incisors. If when the lateral incisors emerged there appeared to be a lack of room, he removed the temporary canine—following this, if the permanent canine when it appeared showed a want of space, he removed the first tem-

* Whitney Memorial Prize Essay. Presented before the Dental Society of the State of New York.

porary molar, and in like manner, and in their turn according to his plan, the second temporary molar was removed to make room for the first bicuspid, and finally, if there was not room in the dental arch for the second bicuspid, he extracted it, and by this course of procedure he was always able to secure a perfectly regular dental arch in the second set, or permanent teeth."

This is the teaching of one who holds no mean place in the estimation of his fellow practitioners.

Another gentleman, occupying also a prominent place in Dental societies, says that in his treatment of children's teeth, when the time arrives for the shedding of the temporary tooth he extracts it to give the permanent tooth a chance, regardless of any evidence that the permanent tooth is ready to erupt. He extracts when the period arrives for the permanent tooth to erupt, because he holds that its eruption is retarded by the continued presence of the temporary one. And again, another gentleman whose exalted attainments have been conceded for a generation, maintains that the premature extraction of temporary teeth involves a contraction of the jaws. It is not an error in the use of terms that he makes (using the word jaws when he meant alveolar processes), but he refers to the contraction of the jaw bones themselves.

These examples are sufficient to illustrate the object of this paper, for in the opinion of the writer each and all are erroneous.

(To be continued.)

Dental News.

ROYAL COLLEGE OF SURGEONS' MUSEUM.

We are requested by Mr. Alfred Coleman to acknowledge the receipt of contributions to the above from Mr. Henry Key, of Rhyl, North Wales; Mr. G. B. Pearman, of Torquay; Mr. F. C. Mortimer, of Portsea; Mr. H. A. Laurence, of Ealing; W. L. Farnham, of Norwich; and Mr. Gorrie, of Dundee.

MEETING OF DENTAL PRACTITIONERS IN BIRMINGHAM.

ON Thursday, Sept. 13th, a meeting of Dental practitioners was held at the Dental Hospital, Birmingham. The meeting was called by Messrs. Sims and Huxley, the local representatives of the British Dental Association, and was for the purpose of "considering the advisability of joining the Midland Branch of the British Dental Association or otherwise."

Among those present were Messrs. Roff King, L.D.S.I., Shrewsbury, President of the Midland Branch of the British Dental Association; W. H. Waite, D.D.S., L.D.S.I., Hon. Sec. of the Midland Branch of the British Dental Association; Henry Blandy, L.D.S.I. and Glas., Member of the Council of the Midland Branch of the British Dental Association; C. Sims, L.D.S.Eng.; F. E. Huxley, M.R.C.S., L.D.S.Edin.; H. B. Neale, L.D.S.I.; F. R. Batchelor, L.D.S.I., William J. Watson, L.D.S.Edin.; T. Dixon Miller, all of Birmingham. John W. Roberts, L.D.S.Glas.; J. H. Wrighton, L.D.S.I., Cannock; F. J. Thorman, L.D.S.Eng., and Stephen Birt, L.D.S.Eng., both of Leamington. Appleby King, L.D.S. Eng., Worcester; R. Owen, Wolverhampton; J. Humphreys, Bromsgrove; F. Richardson, L.D.S.I., Derby, &c.

Dr. WAITE was voted to the chair, and in opening the proceedings, explained the object of the meeting. He said the meeting was called to consider the advisability of the members of the profession residing in Birmingham, the district joining the Midland Branch of the British Dental Association, in which branch he held the position of secretary, but he would like it to be distinctly understood that he was not present this afternoon in his official capacity, but simply as a member of the profession, and at the very kind invitation of his friend, Mr. Sims. There was one thing always foremost in his mind whenever there was a meeting of the members of the Dental profession, wherever it may be, and that was to urge upon every individual the necessity of becoming a member of the British Dental Association, and, following out his plan, he took the liberty of asking all those present who were not already enrolled to lose no time in getting their names entered for membership. He could not understand the position of gentlemen

devoting their lives to the exercise of a profession upon which depended not only their own livelihood, but the well-being and comfort of their families, and yet took no active interest in matters pertaining to the advancement of that profession. Such practitioners might be able to explain and justify the position they took with satisfaction to themselves, but to his mind it was unintelligible. There was a time, and that not so long ago, when there were no opportunities of meeting together as a body anxious for the advancement of their profession, but to-day there was no such reason for anyone standing aloof; and he was sure there was no reason in the construction of the British Dental Association, for its basis was as broad and comprehensive as it could possibly be. Every practitioner in the three kingdoms might have a voice and a vote in every question of importance, and also take a part in every discussion on scientific subjects. The only condition which he must acknowledge being the conduct of his practice according to professional usage. In other words, it was required from every member of the British Dental Association that he should abstain from deceiving the public by fictitious pretensions, and from injuring his neighbour by unscrupulous and unjustifiable competition, and he could not understand how any right-minded man could object to a basis such as that. If they examined the principle upon which the British Dental Association was founded, they saw additional reason why every individual member of the profession should attach himself to the general body, for one of the objects was for the holding of professional meetings at certain intervals in different parts of the country. Such means could not be otherwise than productive of good in many ways; they were useful in bringing members of the profession into closer union, and making them acquainted one with another, and it assisted in arousing a warmer interest in everything pertaining to Dental Surgery; and lastly, they were useful in educating the general public in the position, prospects, and the progress of the profession. They had already held some very successful meetings, more particularly in London, Liverpool, and more recently in Plymouth. It was a fact that every one who had attended these meetings had acknowledged the great amount of in-

terest and pleasure they had created, and there was no doubt in his mind that, as years passed by, these assemblies would become more numerous and frequent, and consequently more profitable to those who participated in them. There was one object to which he would only refer in passing, that was the Benevolent Fund. He presumed that that object had been finally accomplished, since it had been resolved, by an almost unanimous vote, that the fund should be established. It was a work appealing to the deepest and purest sympathies of human nature, and he could not believe for one moment that there would be any difficulty in carrying it out. Returning to the object of the present meeting—the extension of a branch—it was obvious that their design was to bring the work of the Association nearer home to all residing in an important district, but who would probably be unable to attend the annual meetings when held in distant places. This might be considered the primary object, but another and perhaps more important object was to increase the facilities for intercourse among the practitioners residing in certain districts. These objects were abundantly realized by meetings being held in different centres, such as those held at Manchester, Leeds, Shrewsbury, Exeter, Cheltenham, Plymouth and Edinburgh. Up to the present time, meetings had been held in ten English towns, in addition to the one in the capital of Scotland, and, like those of the parent society, have created an immense amount of interest as well as giving considerable pleasure to those taking part in them. He concluded by explaining that the Midland branch had a special feature, not pertaining to any other branch, and that was, it consisted not only of members, but also of associates, for under bye-law 4, any practitioner might be elected an associate by the council of the branch; he would then be entitled to attend all meetings and take part in all discussions; the difference between the associates and members being that the latter only were eligible for holding office in the council. The annual subscription of the former being five shillings and that of the latter half a guinea. He then called upon Mr. Sims to give a summary of letters received.

Mr. C. SIMS said he had received a large number of letters from well-known practitioners apologising for non-attendance. He and Mr. Huxley had sent out circulars to about eighty

gentlemen, and of these he had received about fifty answers, a large majority of whom advised the joining of the branch with the express intention of holding meetings in different towns oftener than was done by the branches of the Association or by the Association itself. With one exception out of the fifty they all spoke in terms that it was of paramount importance to belong to the parent Society, but they did not mind whether they belonged to two or three branches.

Mr. HUXLEY moved—"That this meeting is of opinion that all eligible members of the Dental profession in Birmingham and the district should add their names as members of the Midland Branch of the British Dental Association." He remarked that, after hearing the address of Dr. Waite and the feeling of the letters, he thought there was little doubt but they would have a large number of sympathisers who would desire the same thing, adding that it was the first meeting of the profession which had been held in Birmingham for many years—in fact since the movement of Dental reform was first started. He was sorry to say that there had been a sad state of uncertainty amongst the members of the profession in Birmingham, and no very large number had come forward to join the British Dental Association. Apparently they were hardly strong enough to support a local movement, but they had these branches on a capital basis, a basis which was both liberal and useful, and could not be improved upon. They would be sorry, therefore, to see any possible suspicion of opposition.

Mr. R. KING, in seconding the motion, said it seemed to him that Birmingham was behindhand in representing the interests of the Dental profession. He did not know how many Birmingham practitioners were present, but he knew that several had come a considerable distance to attend that meeting. He hoped that in future the Birmingham gentlemen would come in greater force than they did whenever there was anything of interest in regard to the profession to be discussed. Certainly the circulars which he had received from Birmingham seemed to be almost as numerous as the attendance of the practitioners of that town. Under all the circumstances he thought it would be wise for them to join the Midland Branch of the British Dental Association, and when they had sufficient force they could form a branch of

their own. [At this point a letter of apology was received from Mr. J. Toon, expressing his inability to be present at the meeting.] Mr. King again rose and said that these letters from gentlemen who resided in Birmingham were out of place. If a man had any interest in the Dental profession or the Association, he would come forward and show himself, as other men from a distance had done, at the sacrifice of a few pounds.

Mr. BLANDY, in supporting the resolution, also referred to the few local practitioners being present, and argued there would be a difficulty in forming a local society, as any one who had been connected with a literary or scientific association, would know. There were now in the British Dental Association about 500 members, including the *élite* of the profession both in London and the provinces; in fact there was hardly a man of any name who did not belong to the British Dental Association. He thought that Messrs. Watson and Roberts, who issued the first circular, had done good work in getting up what was perhaps a feeling of rivalry; he felt that good might come from it by arousing other members to exertion on behalf of Dental elevation. He also thought that the resolution before them would be passed unanimously, and that those gentlemen would feel that in the Midland Branch of the British Dental Association they had exactly what they required. What was wanted was frequent meetings, for the sake of professional intercourse; but he thought the first thing, in order to place the meeting on a good foundation, was that those gentlemen who were not already members of the British Dental Association should join it at once.

In reply to a question, the CHAIRMAN said the Midland Branch included the counties of Lancashire, the Western and Eastern Ridings of York, Cheshire, Derbyshire, Nottingham, Shropshire, Staffordshire, Leicestershire, and Worcestershire. There were no head-quarters of the movement, and the annual meetings were held in various places, the next place being decided on at the last annual meeting.

Mr. W. J. WATSON moved the following as an amendment:—"That in the opinion of this meeting a local society would best meet the requirements of Dental practitioners residing in this district, and with a view to forming the same it is advis-

able that a committee be appointed to make arrangements for another meeting to decide the nature of the said society and the area to be covered." He said he would first like to explain the position in which he found himself. He regretted exceedingly, that the action of Messrs. Sims and Huxley, the local representatives of the British Dental Association, had caused many members of the profession to entertain entirely erroneous impressions with respect to the action taken by Mr. Roberts and himself in this matter, and he wished it to be distinctly understood that they had acted in no spirit of opposition to the British Dental Association. The action of Mr. Sims and his colleague, in sending out the circular calling this meeting, dated five days after the receipt of the circular signed by Mr. Roberts and himself, was a most questionable proceeding, and a course entirely wanting in the elements of courtesy and good fellowship, and only calculated to split-up into still smaller fragments a profession hitherto divided against itself. For two or three years he had persistently urged upon Mr. Sims the necessity of some action with a view of forming a local society, and having, as he thought, failed to induce that gentleman to take the initiative, he had joined with Mr. Roberts and sent out the circular mentioned, and in response thereto he had received upwards of forty answers. More than thirty were favourable to the formation of a local society, and while some were of opinion that a local branch of the British Dental Association would best answer the requirements of local practitioners, others thought a scientific society, similar to the "Odontological," would be preferable. He would impress upon them the fact, that while the answers received by Mr. Sims were from gentlemen scattered all over the country, and many were from officers of the British Dental Association or its branches, those he had received were in every instance from practitioners residing within a moderate radius of Birmingham. Mr. Huxley had said that they were not sufficiently numerous to form a branch of the British Dental Association in this district; but in answer to that statement he would say that the Eastern Counties Branch only numbered twenty-three members at its first annual meeting, while he held in his hand replies from thirty-one gentlemen residing within an hour's ride or so of Birmingham, all holding the diploma of

L.D.S. willing to join such a branch if formed. The gentleman occupying the chair this afternoon stated, in a circular issued by him in 1880, as Hon. Secretary of the Midland Counties Branch of the British Dental Association, "That the object of forming that branch was to extend and strengthen the influence of the British Dental Association by drawing together in their own district members of the profession who might otherwise be unable to take an active interest in the objects of the Association." Surely if this applied in 1880 it applies with equal force in 1883, and there can scarcely be two opinions as to the advantages of a local branch in preference to their joining the Midland Counties Branch, as regards the convenience and interests of local practitioners, and it only remained a question as to whether the formation of a strong branch was practical or not. However, he had done his best for what he considered the best interests of the profession, and he left the result in the hands of the meeting; but, before he concluded, he wished to thank those gentlemen who had so kindly given him their support and counsel in this matter, and he sincerely hoped that whatever might be the result of that meeting, every practitioner would, not only by precept, but by example, assist to the best of his ability in meeting, as one body, the members of a profession hitherto split up into factions, by holding out the right hand of good fellowship, not merely in empty form, but in true brotherly love, and thus avoid those petty jealousies which had been so dominant in the past. For his own part he intended, as far as in his power lay, to carry out this policy, and as to the action taken in conjunction with his friend Mr. Roberts, he believed they had both been actuated by a sincere desire to promote the best interests of their profession, and from the support promised he felt convinced he had adopted a course which had met with the approval of his professional brethren generally, and under these circumstances he had nothing to regret, and as far as he was concerned he did not mind whether the Society was a branch of the British Dental Association, or a Scientific Society, so long as it met local wants.

Mr. ROBERTS seconded the amendment, and further explained what had taken place between himself, Mr. Watson, and Mr. Sims in regard to the calling of the meeting. Mr.

Sims said he had expressed his opinion that there would be some difficulty in forming a branch, but as young men of the profession they wished to have a society where they could meet, not once a year but once a month, and have the advantage of scientific discussion, either as a society themselves or as a branch of the British Dental Association. It was in no captious spirit that they had taken up the matter. He only asked Mr. Watson to join with him in sending out the circular after, as he considered, failing to induce Mr. Sims to take action in the formation of a local society.

Mr. T. D. MILLER supported the amendment on the ground of the inconvenience and expense necessary in attending the annual meeting of the Association; and also because he held that they were strong enough to form a society which would prove a mutual benefit to them, and in time quite as good a work would be done by them as would be done by any of the branches of the Association. A discussion then took place as to whether the proposed society should be a branch of the parent society or not, and Mr. R. King suggested that Mr. Watson should alter his amendment so as to make it a branch of the British Dental Association.

In reply, Mr. WATSON said that from the very first they had been desirous of getting a local society for Birmingham. He would be quite willing to alter the amendment that the local society should be a branch of the British Dental Association.

The CHAIRMAN pointed out that according to the bye-laws a branch could not be constituted under 20 members, and the next thing could be a sub-branch, the minimum number of which must be 10. It was suggested that a committee might be formed to obtain the 20 or 25 names, and afterwards take steps to form a branch.

The amendment was altered, the word "Branch" being substituted for "Society."

Mr. ROBERTS remarked that they had no idea of forming a society in opposition to the British Dental Association, and their object in sending out the circulars was to try and decide what should be done.

The CHAIRMAN expressed his opinion that at the present time great difficulty would be experienced in the forming of a local society. The amendment was then put to the vote and

lost. The resolution was subsequently carried. The Chairman said that now the resolution was carried, he hoped sincerely that the annual meeting of the Association—it could not be next year, but might be in the spring of the following year—would be held in Birmingham. Everything depended upon the number of men who would take an active part in the matter.

MR. SIMS proposed “That the Council of the Midland Branch be asked to consider the advisability of holding periodical meetings in the different towns of the Midland Counties for the promotion of Dental science in all its branches, as carried out by the Odontological Society.”

MR. THORMAN seconded the motion.

MR. WATSON remarked that the resolution was rather ambiguous, and might be put in different terms, as the Midland Branch would meet from year to year in different places.

The CHAIRMAN pointed out that the scope of the resolution was that the meetings should be more often, and suggested the word “frequent” be substituted for “periodical,” which was agreed to, and the resolution carried.

Mr. WATSON rose to propose the next resolution, and said having been somewhat in opposition up to the present he felt some pleasure in being able to move a resolution which he felt sure would meet with the cordial support of all present. It was a vote of thanks to the Chairman for his courtesy in the conduct of the meeting. He regretted the meagre attendance of local practitioners, and also the fact that those present had been outvoted by others from a distance, still he did not wish to find fault under the circumstances, as it afforded an opportunity of making the acquaintance of gentlemen it would be a pleasure to know. He thought they were all indebted to Dr. Waite for his attendance, and from his personal knowledge was convinced that gentleman deserved the thanks of all practitioners, for he worked most arduously in their behalf, therefore he had much gratification in being permitted to thus bear testimony to his zeal and energy, more particularly as he had come more than 100 miles to be present when some of their local practitioners failed to come as many yards.

MR. ROBERTS claimed the privilege of seconding the resolution, and bore testimony to the impartiality and courtesy in the conduct of the meeting

The resolution was carried unanimously, and the meeting terminated; after which several intimated their willingness to join the branch, and an hour was spent in agreeable conversation.

[We are authorized to state that it is probable that the result of the recent meeting will be more frequent conferences of Dental practitioners in the Midlands, and it is in contemplation to arrange a *conversazione* in Birmingham during the present autumn.]

APPOINTMENTS.

Mr. A. C. POWELL, L.D.S.I., has been appointed Dental Surgeon for the Cardiganshire General Hospital and Aberystwyth Infirmary.

Mr. J. S. TURNER has been elected Vice-President of the British Dental Association, *vice* Mr. T. Underwood, resigned.

Mr. F. CANTON has been elected Hon. Secretary to the British Dental Association, *vice* Mr. J. S. Turner.

Correspondence.

[We do not hold ourselves responsible for the opinions expressed by our Correspondents.]

DENTAL HOSPITAL OF DUBLIN.

To the Editor of the "British Journal of Dental Science."

SIR,—My attention having been drawn to letters in your Journal concerning this hospital, I would beg to suggest, in answer to "Dental Reform," that as the English contributors to this hospital entrusted the money subscribed to Mr. O'Duffy, he is the person to whom to apply, as to how it was expended. His letter gives no information. When Mr. O'Duffy can show a satisfactory balance-sheet, up to the time when he resigned, it will be quite time enough for the present staff to show theirs, which they are quite prepared to. Mr. O'Duffy, on his return from London, tried to resume his former position in the hospital, but, as the staff found they could not possibly work in harmony with him, it was considered advisable to find

some means of severing his connection with it. The expiration of the lease in May, 1882, enabled them to do so. The hospital was closed for two or three days, and then re-opened as the Metropolitan Dental Hospital. As to the "depressing intimations" regarding it, I beg to say that "as it has been conducted for some time past," the debt on the hospital, not incurred by the present staff, is steadily decreasing, and the number of patients increasing. Surely this cannot be called "failure."

I am, &c.,

F. ST. B. TAYLOR, L.D.S.I.,

Hon. Sec. Metropolitan Dental Hospital.

To the Editor of the "British Journal of Dental Science."

SIR,—The correspondence that appeared in your journal has, I am glad to say, aroused some attention to the working of what is called at present the Metropolitan Dental Hospital; but which was founded under the name of the Dental Hospital of Dublin. I regret extremely that the charges directly made, on even those implied, are only too true. At this stage of the hospital's history it is desirable to the last degree that its character as a teaching institution for the profession, and on which principle it was founded, should be beyond reproach. Many of my brother Dentists in England, at my instigation, contributed to its establishment for the elevation of our profession, and to give effect to Sir John Lubbock's Act in extending the diploma to many deserving members who had not previously any recognised qualification.

As one who has some knowledge of the founding of the hospital, and who has, since its foundation watched closely its career, I am in a position to say that latterly it is neither creditable to the profession nor to those immediately connected with it. This is not a rash assertion; it is one that I am prepared to prove. I hope for a better state of things in the not distant future. I have yet some confidence that the consulting staff, Drs. Mapother, Duffey, Quinlan and H. G. Croly, will see their way to enforcing a suggestion that has been more than once made to each of them, namely, that a full and searching enquiry should be held, not only for their own individual reputation, but also for that of the Royal College

of Surgeons in Ireland, and her distinguished College of Physicians.

I am, &c.,

JOHN O'DUFFY, L.D.S., R.C.S.I.

Member of the Representative Board, British Dental Association.

58, Rutland Square, W.

Dublin, Oct. 9th, 1883.

MONTHLY REPORT OF CASES TREATED AT THE DENTAL HOSPITAL OF LONDON.

FROM SEPT. 1ST TO SEPT. 30TH, 1883.

Extractions	{ Children under 14	450
	{ Adults	1046
	{ Under Nitrous Oxide	238
Gold Stoppings		72
White Foil ditto		10
Plastic ditto		309
Irregularities of the Teeth treated mechanically		43
Miscellaneous Cases		128
Advice Cases		133
Total		2429

J. O. BUTCHER, *House Surgeon.*

MONTHLY REPORT OF CASES TREATED AT THE NATIONAL DENTAL HOSPITAL, FROM SEPT. 1ST TO SEPT. 30TH, 1883.

Number of Patients attended		1420
Extractions	{ Children under 14	449
	{ Adults	818
	{ Under Nitrous Oxide	160
Gold Stoppings		48
Other Stoppings		210
Advice and Scaling		159
Irregularities of the Teeth		85
Miscellaneous		177
Total		2106

CHAS. W. GLASSINGTON, *House Surgeon.*

QUARTERLY REPORT OF CASES TREATED AT THE DENTAL HOSPITAL OF EXETER, BEDFORD CIRCUS. FROM JULY 1ST TO SEPT. 30TH, 1883.

Extractions	{ Children under 14	350
	{ Adults	843
	{ Under Nitrous Oxide and Ether	46
Stoppings	{ With Gold	13
	{ With White Foil	4
	{ With Plastic Material	147
Miscellaneous—Irregularities of the Teeth, Scaling, &c.		140
Total		1543

HENRY B. MASON, *Hon. Sec.*

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 82, Mortimer Street, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
3. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
4. All communications relative to subscriptions and advertisements are to be addressed to the Publisher, Mr. J. P. Segg, 82, Mortimer Street, Regent Street, London, W.
5. The Journal will be supplied direct from the office on PREPAYMENT of subscriptions as under:

Twelve Months (post free) 14s. 0d.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skliros, 82, Mortimer Street, Regent Street, W. A single number sent on receipt of seven (penny) stamps.

Communications have been received from Messrs. T. H. Macintosh (Edinburgh), Dr. G. N. Chipley (Colorado), C. Somerset (London), Cotterell and Co. (Liverpool), A. C. Ponds (Cameron), Alex Hume (Manchester), J. O. Butcher (London), H. B. Mason (Exeter), Ch. Glassington (London), J. P. Thomson (Belgium), F. St. B. Taylor (Dublin), John O'Duffy (Dublin), J. Winship (York), A. Haworth (Leek), Alfred Coleman (Streatham), M. Stevens (Paris), G. W. Field (London), J. Williams (Walsall), J. P. Main (Southport), William Barker (London), Dental Reform.

CORRECTION.—Errata.—On page 948, under the head of "Appointment," the name of Mr. Alex. Herne should have been Mr. Alex. Hume.

BOOKS AND PAPERS RECEIVED.

"British Medical Journal," "Pharmaceutical Journal," "Missouri Dental Journal," "Independent Practitioner," "New England Journal of Dentistry," "Dental Cosmos," "Odontologie," "Proceedings Connecticut Medical Society," "Centralblatt für Zahnheilkunde," "L'Art Dentaire," "Dental Record," "Revue Odontologique," "Ecole and Hopitaux Dentaire de Paris."

NOTICE.—We desire that it may be clearly understood that our pages are open to all for free expression of their views on matters connected with our profession. We only ask for terseness of expression and MODERATION IN TONE.

When otherwise unobjectionable, difference of political or other opinion will never be regarded by the Editor as a disqualification for the admission of any communication to the pages of the **BRITISH JOURNAL OF DENTAL SCIENCE.**

British Journal of Dental Science.

No. 379. LONDON, NOVEMBER 1, 1883. VOL. XXVI.

ANTISEPTIC DENTISTRY.

By DUDLEY W. BUXTON, M.B., B.S.Lond., &c.

FEW men have it in their lives to be told that they and their labours have marked an epoch, have given a new starting-point for the world's thought, and initiated a fresh method of procedure at once novel and uncontrovertible. Yet Professor Lister has been told these things over and over again. That all surgeons owe the greatest gratitude to Lister's researches goes without the saying, and few, we opine, would grudge Lister all *kudos*, even though the more thoughtful and widely read recognise that many other workers were engaged upon Lister's lines, and very many, notably in Germany, have pursued and pushed Lister's theories far further than even he could have contemplated. To our mind the keynote of the importance of Lister's work lies in his teaching men to look at all surgical lesions as a possible outcome of as yet unclassified, nay more, unrecognized hosts of micro-organisms. In this connexion we may point out that Buhl, Baumgarten, Koch, by specialising certain micro-organisms to certain lesions, carry us one step, and that step cannot be estimated too highly, on the road which we cannot but believe will eventually elucidate many of the dark passages in pathogenesis.

In a very able paper read before the International Medical Congress, Messrs. Underwood and Milles sought to connect the decay of teeth with the presence of micro-organisms. Their conclusions may well be summarised as follows:—

Caries of the teeth is dependent on micro-organisms. These organisms attack the organic material, and by their life condition generate an acid. This acid dissolves out the

calcium salts, causing an eroding decalcification. The important practical bearing to Dentists consists in the corollary—exclude these organisms and you exclude caries—cure the condition favourable to the proliferation of these organisms and you prevent the caries.

While we cannot speak too highly of all researches in this direction, we feel impelled to warn those who are labouring to elucidate the subject of the pathogenesis of caries, against theorising and accepting, as a fact proven, any speculation which rests upon unsifted evidence.

The organisms figured by these authors, the measurements of which are not given, appear to be *micrococci* and the *bacterium termo*, which are the inevitable companions of putrefaction. So that while it cannot be affirmed that such micro-organisms are able *per se* to initiate caries, it does not follow that more exhaustive experiments may not reveal some causal relation between them and the morbid condition with which they are at all times associated.

Few portions of the body present greater difficulties to an antiseptic surgeon than the mouth. The constant ingestion of animal and vegetable material, together with fermentable matter, forms a perfect bacterian paradise. The teeth of to-day, whether due to ancestral taint or “that unmixed evil, civilization,” form frequently a lurking-place wherein putrefaction may occur. That saliva acts so as to prevent sepsis is a very old theory; but it is not at all certain at present how often this secretion is itself pathological, probably always in the mouths of tobacco-smokers and chewers. It is probable that mechanically saliva plays an important part in preventing putrefaction by irrigating the mouth. While commenting upon the pathological conditions which are met with in saliva, a subject which requires much patient labour to elucidate, we may note that in the course of some experiments concerning septicæmia in mice, undertaken at the instance of the American Government, it was found that the saliva of some (apparently healthy) individuals caused virulent septicæmia in mice when injected hypodermically.

But although, as we admit, there still obtains grave doubt as to the actual pathogenesis of dental caries being traced to the common bacilli of putrefaction, yet we cannot remain

blind to the necessity of treating cases of dental caries as antiseptically as possible, and so at least ensuring cleanliness, and thus isolating, as far as may be, a possible centre of infection.

There then remains to point out that Koch and Wolffhügel working upon the subject of bacilli-culture, found certain substances exercised a most prejudicial and even fatal effect on these organisms.

Corrosive sublimate ranks first as a preventive of bacilli-growth and existence. An aqueous solution of 1 in 20,000 kills the spores in ten minutes. So that 1 in 5,000 is a certain disinfectant, even when exposure is brief. Aqueous solution of strength of 1 in 300,000 prevents germination of the spores.

Sulphurous acid, in proportion of one volume per cent., kills bacteria in from 20 to 30 minutes. However, other researches induce us to place this body low down in our series, since it has but little penetrating power.

Five per cent. of carbolic acid kills anthrax forms of bacilli, which are very tenacious of life; but the same strength of chloride of zinc fails completely to kill the spores, even after a month's soakage.

Iodine, bromine, and chlorine, which are hardly applicable to Dental Surgery, take about the same position as sulphurous acid. A noteworthy point is that, the solutions which are most efficacious are watery ones, alcoholic are inert.

Since Billroth's well-known pamphlet upon carbolic acid poisoning, iodoform has been very largely employed, and in the hands of most surgeons has proved most useful. It is still *sub judice*; but we may point out the peculiar merit it has of keeping foul discharges from exhaling malodours. In truly Dental Surgery, and all operations about the mouth, iodoform has probably a rich future before it, for its easy solution in encalyptus oil and ether render it easily workable for Dental Surgery.

It is perhaps a pity for Dentists that the *dissecta membra* of the jaws are so easily replaced, since were we to lose a tooth like the losing of a leg, we should find more care taken in prophylaxis. And in prophylaxis truly will antiseptic surgery open a wide and most useful field.

We regret that more systematic work in this arena has not been undertaken, and that even if the leaders of the profession have not leisure for such research, at least those who aspire to occupy the rank of scientific Dentists, and whose time and energies are fresh from the hospital and laboratory, do not, with patience and knowledge, work out the many burning questions which lie involved in the term—anti-septic Dental Surgery.

Whilst upon the subject of prophylaxis, it is incumbent upon us to point out how necessary it is to be able to recognize the remote or immediate causes of teeth-rotting. To be a Dentist, one must be a physician; one must be competent to grasp all those conditions which minister to the initiation of that prime factor be it what it may, which brings to bear a stress upon the enamel and dentine, and so places the teeth in a position of potential decay. We think no doctrine more detrimental alike to the profession and laity than that one which whispered into too ready ears, dissevers a rational and full curriculum of medical study from the course prescribed for the Dental Surgeon.

(To be continued.)

CLEFT-PALATE, HARE-LIP, STAPHYLORAPHY.

Under the care of CHRISTOPHER HEATH, F.R.C.S.,

HOLME PROFESSOR OF CLINICAL SURGERY AND SURGEON TO THE UNIVERSITY COLLEGE HOSPITAL.

THE following cases possess great interest alike from the point of view of practice and pathology:—

E. J. T., a fair, well nourished girl, aged 4 years, was admitted into University College Hospital early in Oct. On admission she was found to have a cleft extending through her hard and soft palates. The alveolar arch is well rounded and regular, the teeth are not deformed, displaced, or crowded. The palate arch is somewhat high. There is some hypertrophy of the faucial arches, but exact estimation is difficult in this case. The cleft sides of the soft palate move actively and end in clubbed extremities.

The voice is nasal and muffled, to the right of the mesial

line of the upper lip is a linear cicatrix, the result of an operation undertaken during patient's infancy for the remedy of congenital hare-lip.

The nostril on this side is drawn down and flattened, and the lip somewhat tied to the bone.

Family history unnoteworthy. General health is very good; a curious overgrowth of golden hair exists of both elbows, the skin in that situation being quite shaggy.

Oct. 10th. The patient was placed under the influence of chloroform, and Mr. Heath proceeded to close the aperture in the palate.

The edges of the soft palate were revived by paring.

The mucous membrane and periosteum were, by means of a raspator, raised and separated from the subjacent bone. The free edges were then freshened by paring. Introducing a pair of scissors curved on the flat, Mr. Heath divided the soft palate from the hard, making the cut as nearly transverse as possible. Three fine iron-wire sutures were passed, drawing together the muco-periosteal flaps, while the soft palate was united by two horse-hairstitches. The hæmorrhage was trifling, and the tension on the stitches appeared far from excessive.

On Oct. 18th, the middle suture was removed, the structures rapidly uniting.

On Oct. 24th, Mr. Heath undertook a further operation, namely, one to remedy the disfigurement caused by the flattening of the right nostril, a result of the former hare-lip operation.

The palate was seen to be intact, save for a minute aperture at junction of soft and hard palates, and the sutures were removed.

The operation consisting in cutting through the lip, and freely paring away superfluous tissue. The two edges were then accurately adjusted and pins inserted. The whole of the cicatrix was removed.

The child has made a rapid convalescence, and shows a most marked improvement in her appearance.

Remarks.

Operating in cleft palate is a subject of great importance, the more so at the present time, when there are not wanting

those and notably in America, who deny the advantages claimed for staphyloraphy, as instrumental in aiding phonation, and actually go so far as to undertake a fresh operation, having for its object the restitution of the former cleft. Clearly then, we must decide (i.) is it expedient to operate?—and the consensus of opinion answers in the affirmative; (ii.) in what cases are we to operate?

Christopher Heath, in some papers which appeared in our issue of December 1st, 1882, *et seq.*, says:

“In deciding, therefore, as to the propriety of an operation for cleft palate, it is necessary to take into account, not merely the mechanical difficulty of bringing the soft tissues on each side of the median line into sufficiently close proximity to unite, but also the length of the palate, and the probability that it will sufficiently shut off the mouth from the nose to prevent the nasal intonation commonly met with both before and after operations for cleft palate. In no case of successful operation for cleft palate, I believe, is the palate sufficiently in contact with the back of the pharynx to allow water to be injected from one nostril into the other, without entering the pharynx when the mouth is open, as is the case in well-formed throats. And yet, many of these patients have very little nasal intonation, which is to be explained, I believe, by the hypertrophied condition of the muscles forming the pillars of the fauces, which may be seen when the patient attempts to swallow with the mouth open, acting powerfully to narrow the fauces, and thus make up for the deficient length of the palate.

“Before deciding, therefore, as to the advisability of an operation upon the soft palate, it is well to grasp the chin of the patient and hold the mouth open, so as to aid his efforts at swallowing, when, if the two halves of the soft palate come into contact in nearly their whole length, while the superior constrictor and palato-pharyngei muscles closely approximate the palate and pharynx, the case is one in which union may almost certainly be obtained, and probably a fair result as regards phonation.”

It would appear, according to the same author, that the height of the palatine vault is an important factor in carrying

operators to a decision. The high palates "when most successfully closed, are apt to lead to disappointment."

These remarks are valuable as giving a definite rule for operating, but it must be confessed that much can be urged against the operation as a means of improving voice-formation. In this connexion we may notice a plea on the side of non-operators by Mr. Hunt, published in the "Monthly Review of Dental Surgery." There can be no doubt that the writer is too much influenced by a specialist's view of the matter, and fails to recognize the very marked improvement effected in phonation in many cases of successful operation. And a very important point which is generally overlooked is, that vicious habits of enunciation, and, if we may use the phrase, compensatory grimacing, are acquired by children in their attempts at speech. Now to fix an artificial apparatus such as those perfected in this country by Oakley Coles, and in America by Kingsley, in the mouth of a child, is difficult, if not impossible. And were such a plate fixed it must be modified as the growth of bone takes place, and is liable to exert a very prejudicial pressure upon the growing bone. In these cases operations undoubtedly are most beneficial, and enable the instructor to teach the child how to enunciate by employing his normal physiological apparatus.

Again, in this case and the next, we note several steps of interest. The difficult and often fallacious attempt at dividing the muscles of the soft palate by Fergusson's or Pollock's method, is replaced by cutting the soft palate from the hard by scissors, a method fully described in the papers of Heath, to which we alluded above.

This method, besides being easy to perform with certainty, takes off the tension from the sutures far better than the older plans.

In nearly all cases of hare-lip operated on in infancy there results a facial deformity, which is due to flattening and drawing down of the nostril, and which gives the face a lop-sided aspect. In these cases an operation, we might almost say of adjustment, remedies the evil, and restores the face to an almost normal aspect. Such adjustment operations are simple and their results most pre-eminently satisfactory.

(To be continued.)

A CASE OF REMOVAL OF THE TONGUE AND ONE-THIRD OF LOWER JAW.*

By W. MARTIN COATES, F.R.C.S.ENG.,

SURGEON TO THE SALISBURY INFIRMARY.

GEORGE L., groom, aged 53, was admitted to the Salisbury Infirmary under me on April 23rd, 1881, with an epitheliomatous growth occupying two-thirds of the right half of the tongue, and fully a third of the left half. This growth adhered firmly to the gum at the inside of the jaw from opposite the first right lower molar to beyond the second incisor of the left side, and invaded the gum covering the inside of the symphysis.

The patient was a small, slight man, of good health, cheerful, and of great courage. On May 11th, 1881, the second right lower molar was extracted, and the first molar on the left, under chloroform, a gag having been first applied. A small whipcord was passed through the tip of the tongue, and another half-an-inch in front of the hyoid bone. An incision was made through the lower lip, and carried through the integument to a point immediately in front of the upper part of the thyroid cartilage. The lateral flaps were quickly reflected. The bleeding vessels were secured as I proceeded by Spencer Wells's forceps. The jaw was partly sawn through at the points from which the teeth had been extracted, and the division of the bone was completed by chisel and hammer. The separated bone was now seized at its middle portion with the lion forceps, and rapidly removed by a few touches of a scalpel. The remainder of the gum on each side was separated from the jaw to near its angle. The tongue being now drawn forwards by means of the whipcord, the chain of an *écraseur* was carried to a point just in front of the farther whipcord, and the upper end of its solid part being pressed well back, the chain was tightened. The handle of the instrument was worked once in twenty seconds by the watch until it had cut through the tongue and the parts below it. The vessels that bled, which were very few, were now tied, and the integuments brought together by carbolised gut sutures. The patient was fed for twenty-four

* Paper read at the Fifty-first Annual Meeting of the British Medical Association, held in Liverpool, with discussion.

hours by the rectum. A nurse sat by his bedside night and day for forty-eight hours, and drew the tongue forward whenever there was sense of choking. The man went on uninterruptedly well, and was discharged cured on June 25th, 1881, having been kept on as an out-patient for observation. He remains quite well, does his work as groom, swallows soft food, talks sufficiently well to be understood.

This operation undoubtedly was not so striking as that introduced and so brilliantly executed by Mr. Whitehead, and I volunteered to relate it if grouped with Mr. Whitehead's cases, not certainly with a view of claiming any credit, but to enable you to compare the two modes, and to come to an impartial conclusion. I have removed the tongue by knife and scissors, by the galvanic and thermal cautery, and by the chain *écraseur*. I infinitely prefer the last. There has been less bleeding, and the patient has escaped the putrid surfaces inseparable from the hot iron or wire, a very important point. The chain *écraseur* has the overwhelming advantage that you can conveniently and more safely remove the parts underneath the tongue, and so escape, more probably, malignant infiltration.

I feel this so strongly that, had I a tongue to be removed for malignant disease from my own person, I should elect to have it done by an incision below the symphysis, to a level of the cricoid cartilage, the mucous membrane being, on each side, separated from the inside of the jaw, and the chain *écraseur* applied so as to remove as much of the tongue and the parts underneath it as possible.

In this operation, there is much less blood lost, and much less peril from blood flowing back into the larynx and trachea, a very important matter.

That in Mr. Whitehead's hands the tongue can be removed by his method with a moderate loss of blood, I do not doubt; but surgical operations are not always done by Whitehead's, but much more frequently by ordinary surgeons. That being the case, it is of great importance that operations be made as easy and as bloodless as possible for patients whose powers have been weakened by pain, from deficient nutriment arising from the difficulty of mastication, and anxiety; and who, after a severe operation, and having to submit to an absence of solid food, can be expected to bear well loss of blood?

Dr. FENWICK (Montreal), during the last few years, had removed the tongue on eight or ten occasions, and in performing the operation he had employed a modification of the method suggested by the late Mr. Nunneley, of Leeds, and he thought that by this means the entire organ, with the floor of the mouth, could be removed. In the last case in which he remove the tongue and floor of the mouth, it was found necessary to take away a portion of the alveolar body of the lower jaw-bone, and in its removal he cut into what appeared to be sound bone tissue. This might be considered contrary to surgical rule, but he could not see what more could be done under the circumstances, as the removal of the entire lower jaw could not have been done without great risk to the patient's life. He could not bring as satisfactory statistics as were given by Mr. Baker. All his cases recovered from the operation, and all, save one, subsequently died from recurrence of the disease at various periods from three to six months. He would mention, however, the case of one man who suffered from extensive epithelioma of the tongue and floor of the mouth, and in whom the entire mass of disease was removed. The operation was performed in 1869, and the man was still living. No recurrence of the disease had, so far, been noticed.

Mr. BANKS (Liverpool) suggested that the particular method of removing the tongue was not a matter of vital importance so much as the performance of an operation, no matter what its details might be, which would ensure a thorough and complete removal. Individual surgeons became used to individual operations, and, provided the surgeon saw his way to a perfect clearance of the disease, he would do best to employ the plan with which he was most familiar. Mr. Banks mentioned that he had, in three cases requiring extensive removal of the tongue and floor of the mouth, done a preliminary laryngotomy. This took only a few minutes to do. The tube being inserted, the anæsthetic was administered through it, and the pharynx firmly plugged with a sponge. By this means no blood entered the lungs, and the operation could be done slowly and deliberately. It had the advantage, also, of diminishing the danger from septic pneumonia, which was undoubtedly often due to the putrefaction in the lungs of blood which had been

sucked deeply into the air-cells during violent inspiratory efforts.

Mr. CLEMENT LUCAS (London) said that though the operation by *écraseur* was advocated as being less liable to be followed by hæmorrhage, it happened curiously that the only case he remembered in which secondary hæmorrhage followed removal of part of the tongue was an operation by chain *écraseur*. It was performed by a colleague, who had divided the jaw but not the parts over it, and had introduced the chain beneath the chin. Severe hemorrhage followed, and when Mr. Lucas arrived, the man was blanched and almost dead. The parts over the jaw were divided, and the jaw turned up, as is done in the dissecting-room, to gain a side view of the tongue. In this way a good view of the bleeding lingual was obtained. The vessel was twisted, and the patient recovered. He had seen many cases treated by galvanic *écraseur*, and had not observed the ill-results attributed to this method by those who practised some other method. It was probably the simplest and best means of removing portions of the tongue. He would not bind himself to any particular operation, but just now they were trying Whitehead's method at Guy's Hospital. He agreed with Mr. Banks that it was most important to remove freely both glands and original growth and, where both could not be removed at the same operation, the glands should be first attacked.

Mr. BAKER replied that he agreed with Mr. Mitchell Banks in thinking that a preliminary tracheotomy was of great value in certain cases of extensive operation about the mouth or jaws. It was important that the pharynx should be plugged thoroughly under such circumstances, as without this, blood would more readily trickle into the larynx and trachea than when tracheotomy had not been performed. He could not agree with Mr. Lucas that the wire cautery was a good method of removing the tongue. With reference to secondary hæmorrhage, he thought the freedom from such in his cases had been largely due to the fact that he tied the main vessel either before or after the removal of the *écraseur*. Mr. Baker said that he quite intended to try the method introduced by Mr. Whitehead; and he was quite ready to believe that, in some cases, this method would be found better than any other.

SOME POINTS IN ORAL SURGERY OF INTEREST TO
THE GENERAL PRACTITIONER.

BY GEORGE L. PARMELE, M.D., D.M.D.

(Continued from p. 965.)

Dr. Oliver Wendell Holmes, in a commencement address delivered before the students of the Dental Department of Harvard University, after speaking in his happy strain of the value of the teeth in relation to the beauty of the human countenance, says: "But we must add to this the consideration, that speech is so largely dependent on the perfection of the teeth, that language, we might say, loses a little with every tooth that falls. What can be more painful to witness than the efforts of a hapless friend to bite his consonants out of the alphabet when he is reduced to the condition of the infant, whose boneless gums are unfit for any task but the caressing pressure of the maternal mouthful!" "And then the humbler, but still necessary function of mastication, how much depends upon the ease and perfection with which this is performed! You can tell the state of a village by going to the mill. If it has a enough to grind, and grinds it well and cheaply, you will find good farms and well fed people; so if you see a good square jaw, filled with good sound teeth, and moved by a set of muscles that mean business, and do it, you will find in all probability, that they nourish a sound frame in man or women." The teeth and their surrounding tissues, connected as they are through the fifth pair of nerves with the centres of innervation and the vasomotor system, do undoubtedly, when in an abnormal condition, exert through the ramifications of these nerves a baneful influence through the body. I am continually impressed with the ignorance of the public in regard to this matter of so much value to their general health, that if they could only be made to understand more fully about it, I think they would be saved a great amount of suffering, to say nothing of saving them from bad dental practice, which instead of encouraging the preservation of these useful organs, hasten their destruction and loss. Even physicians are not as well informed on this subject as they might be, to advantage. As medical colleges are now conducted, medical graduates go forth in as great ignorance

of diseases of the teeth as do dental graduates of general disease. Lest you think me opinionated in my views on the subject, let me quote what I heard J. Marion Sims, M.D., say at a meeting of the New York Odontological Society. "As to the effects of diseased teeth upon the general health, I wish medical men generally could be better educated upon that point. We are all familiar with the fact that decayed teeth frequently cause neuralgia; and this is the extent of medical education on the point. They usually do not recognize the fact that, as a general thing, decayed teeth, teeth with inflamed alveolus, with matter exuding from around the teeth, are the means of producing more nervous disorders, more terrible consequences to the general health, than almost any other thing that can happen." . . . "Some simple knowledge of this subject would enable the medical man to treat them more successfully than he does. It is a matter of regret that medical men generally have so little knowledge of this subject." He related numerous cases to illustrate his views.

At the same meeting Dr. Frank Hamilton expressed similar views.

Samuel Sexton, M.D., Surgeon to the New York Ear Dispensary, in the "American Journal of Medical Science," says: "The apathy which has always existed on the part of the profession regarding this subject has left the treatment of diseases of the teeth in the hands of men who have occupied themselves almost exclusively with its mechanical department, and who, as a rule, have but little to do with the teeth in a medical aspect. It is greatly to be regretted that a field of such interest has been abandoned by the profession. Many affections of the teeth lead to most grave and intractable diseases of the regions presided over by the sympathetic system, which are often suffered to be long unattended before they are brought under appropriate management. Thus an ear, eye, or throat difficulty may become firmly seated, or a neuralgia, which renders life intolerable, established. When I look back at the operation for the removal of Meckel's ganglion, which I twice witnessed, for the relief of facial neuralgia, it occurs to me that the most simple of remedies could have controlled that disease when it was first induced, as

was probable in these instances, by a carious tooth. I think you will find Dr. Sexton's article well worthy of perusal.

I cite the following case from my own practice—a simple one—as showing long continued unsuccessful treatment of neuralgia of about five years standing, of the trifacial nerve, caused by a periodontal abscess opening into the antrum, and causing severe neuralgia, with the absence of pain in the teeth, which caused the trouble.

Mrs. H., aged 50, was referred to me September, 1881, by Dr. C., for treatment. I found the left superior canine with its crown missing, and the root loose from chronic periodontitis. The bicuspid and first molar were missing, and half an inch above the margin of the gum, at a point formerly occupied by the second bicuspid, a fistulous opening was discovered, which upon probing, was found to lead to the antrum. Removal of the canine root was followed by a slight discharge of pus, and a probe passed into its socket also entered the antrum. Surrounding each of these openings was carious bone, greater in amount, however, at the canine opening where the maxilla was dissolved, for a space half an inch in diameter.

Having thoroughly removed all diseased bone with bone-cutting burs, in the dental engine, I then, by means of a small tube attached to a fountain syringe, allowed about a pint of warm salt water to flow into the antrum at the anterior opening, which made its exit at the posterior opening.

By changing the tube to the posterior opening, I reversed the current, thus insuring thorough cleaning of the sinus. This was followed by an injection of,

R Eucalypti (Sanders' and Sons), 3 i.

Iodoformi, gr. x.

Aquæ, 3 j.

M.

Then a tent of candle-wicking saturated with glycerine and eucalyptus, was passed into the antrum at the anterior, and brought out at the posterior opening where the two ends were tied together. A few days later floss silk was substituted for the wicking. This treatment continued a week, when the tent was admitted and the patient being instructed, from that time, kept the parts clean herself. In a month, after a few stimulating injections of

R Zinci Sulphatis, gr. iij.
 Plumbi Acetatis. gr. v.
 Tincturæ Catechu, gtts. x.
 Aquæ, 3 i.

M.,

the parts had regained their normal condition, the neuralgia disappeared, and the openings gradually healed. The fountain syringe for thorough cleansing of the antrum I find very useful. I have never seen its use for this purpose mentioned, nevertheless it may be an old idea, though new to me. It is more easily managed, either by operator or patient, than any other form of syringe.

(To be continued.)

HARDENING DENTAL RUBBERS IN STEATITE WITHOUT THE AID OF FLASKS.*

By G. BRUNTON, Leeds.

EVERY practitioner will admit that the use of the flask for packing dental rubbers is not a perfect one; that there are faults in the process, which produce in some cases porosity, in some raised bite, teeth shifted in position, &c., &c., faults which are exceedingly annoying to the workman and disappointing to the patient.

The process which I will try to describe to you is very simple and requires no special machinery for its performance; is applicable to all kinds of vulcanite work, both full and partial cases, combination work of gold and vulcanite, regulation plates, repairs in fact any case, no matter how complicated, can be done quicker and better by this method than by flasking in plaster of Paris, for it is a well known fact that rubber is deteriorated by being hardened in plaster. The rubber which I prefer to use is bowspring. Owing to its superior softness before vulcanizing, it can be manipulated like wax. The models used are ordinary plaster ones, but to prevent contact with the rubber they are coated with liquid silex, this fills the pores of the plaster, produces a smooth polished surface on the palatal

* Paper read, with full discussion, at the Annual Meeting of the British Dental Association, Plymouth, Aug. 24th, 1883.

side of the finished work, and prevents the steam from exerting pressure on the rubber where it is not wanted, namely, on the palatal side. The models being dry are coated with a thin solution of rubber in chloroform, and a piece of sheet rubber of the desired size and shape is warmed and pressed close to the model, excluding all air. Any extra thickness may be built up by adding small pieces of warm rubber. The teeth to be mounted are now put on a small metal tray and heated over a spirit lamp, and one by one placed in position on the model. When all the teeth are mounted, trim off the extra rubber with a hot knife, cover the rubber with tin foil, taking care not to disturb the position of the teeth. The work is now ready for hardening, and is placed in a tin box which is large enough to allow about $\frac{3}{4}$ -in. room all round for the investment: this consists of steatite or soap-stone in powder. The dry powder is pressed lightly in till the box is quite full, the lid is closed and fastened down with a thin piece of wire. The hardening may be done in any vulcanizer, but I prefer to use Dr. Campbell's new mode heater, as it can be brought to the proper temperature before putting in the work. The steam pressure is brought to 60 lbs., and after the door is screwed on a very small quantity of steam is let into the hot box and left for three hours. When ready to remove, the tin box may be opened while hot. The steatite shakes out quite dry, and may be used over again many hundreds of times. The work is now to be cooled in water, the tin foil removed and the case finished in the ordinary way. Dental rubber so treated will be found to possess more toughness and density than that which is hardened in plaster of Paris. The sp. gr. of bowspring rubber is before vulcanizing 1.4632; after vulcanizing in plaster of Paris it is 1.5103; and after vulcanizing in steatite 1.5278. This you will see shows greater density in rubber hardened in steatite. A proof of the superiority of this process is found in the close adaptation of the rubber to the teeth, there is no space left for food to lodge in. To show you how little risk there is of porosity, I hand round a cube of rubber 1 inch square, which was hardened with a steam pressure of 45 lbs., time four hours.

In conclusion, I would refer any who wish for fuller information on the subject of producing rubber work without the aid

of flasks to Mr. Balkwell's book on Mechanical Dentistry, from which I first got the idea. *All* my rubber work has been done for some years without the aid of flasks, and I hope the communication of this method may prove of as much benefit to those who may try it, as it has been to me.

PLASTIC SURGERY OF THE FACE.*

By PROF. L. McLANE TIFFANY.

DELEGATE FROM THE MEDICAL AND CHIRURGICAL FACULTY OF MARYLAND.

HE divided his subject into three classifications. 1st, Congenital deformities; 2nd, Deformities caused by accident or disease; 3rd, Deformities caused by cicatricial contraction. The first class differed from the others in that the edges of the opening were covered with healthy tissue. To cure these deformities it is necessary to have—1st, tissue to fill up the vacancy of that which is gone; 2nd, placing this tissue in position and nourishing it; 3rd, filling the vacancy made by the transfer of the removed tissue. The rules to be guided by in the necessary operation, he formulated in the following manner: 1st, skin similar to that which has been lost should, if possible, be selected, and the flap so selected should be one-fourth larger than the space to be filled, for it will contract to that extent; 2nd, union by first intention should always be attempted, failing in this, then union by granulation; 3rd, incisions should follow natural furrows, and be out of sight; 4th, the pedicle of the flap should be broad, and not twisted when placed in position; 5th, the best dressing for such surfaces, if granulating, is iodoform and cotton; 6th, to arrest hæmorrhage during the operation, use hot water and pressure, but avoid ligatures and styptics; 7th, use quill sutures, passed very deeply, and hold the edges together lightly with fine wire; 8th, precede administration of chloroform by a hypodermic injection of morphia; 9th, if the operation be about the mouth, the patient should be so placed on the operating table that the blood will flow from the mouth instead of towards the larynx.

* Paper read at the Meeting of the Medical Society of Virginia.

CIVILIZATION NOT THE CAUSE OF TOOTH DECAY.

By JOHN J. R. PATRICK, D.D.S., Belleville, Illinois.

(Continued from p. 958.)

CHINA.—“The Chinese have no prejudices whatever as regards food; they eat everything and anything from which they can derive nutrition. Dogs, rats, mice, monkeys, snakes, sea-slugs, rotten eggs, putrefied fish, unhatched ducks and chickens. Both in eating and drinking the Chinese are temperate, and are satisfied with two daily meals; rice about 10 a.m., and rice at 5 p.m. The only repugnance I have observed in China is to the use of milk. I never saw or heard of butter, cream, milk, or whey being introduced at a Chinese table.”—*Bowring, in “Statistical Society Journal,”* vol. ii., p. 47.

JAPAN.—“Japan surpasses most countries hitherto known to us in the multiplicity of the articles of food to be met with in its islands and the surrounding ocean. Rice, which is here exceedingly white and well-tasted, supplies with the Japanese the place of bread; they eat it boiled with every kind of provisions. Miso soup boiled, with fish and onions, is eaten by the common people, frequently three times a day, at each of their customary meals. Misos are not unlike lentils, they are small beans and are gathered from the *Dolichossoga*. Fish is a very common dish with the Japanese, both boiled and fried in oil. Fowls, of which they have a great variety, both wild and tame, are eaten in great abundance, and the flesh of whales, though coarse, is in several places, among the poorer sort, a very common food. In their victuals they make a very plentiful use of mushrooms, egg-apple, carrots, and several kinds of bulbous roots and beans. Oysters and other shell fish, shrimps and crabs boiled or stewed, are also eaten.”—*Thunburg’s Travels*, vol. iv., p. 35. 1705.

INDIA.—“From the earliest period the most general food in India has been rice, which is still the common food in nearly all the hottest countries in Asia. It is not, however, so much used in the south of Hindostan as formerly, and has been replaced by another grain, called ragi.”—*Buckle’s History of Civilization*, vol. i., p. 64.

“The principal food of the people of Hindostan is wheat,

in the Deccan, Jowár and Bájra; rice as a general article of subsistence, is confined to Bengal, and part of Behár, with the low country along the sea all around the peninsula. In most parts of India wheat is only used as a luxury."—*Elphinstone's "History of India,"* vol. i., p. 12.

CEYLON.—"The ordinary diet of the people is very meagre, consisting of rice seasoned with salt, the chief condiment of the East, and a few vegetables flavoured with lemon juice and pepper. Beef is forbidden, being an abomination. The hondrew class are rather more luxurious, eating from five to six sorts of food, one or two of which consist of meat or fish. Their chief food, however, is rice, the other dishes being used principally for a relish."—*Pridman's "Ceylon,"* vol. i., p. 263. The endless cocoa-nut forests in Ceylon provide the natives with the most important article necessary for supporting existence.

EGYPT.—"Beef and goose constitute the principal part of animal food throughout Egypt. Vegetables form the principal food of the lower orders, and lentils are the article of diet."—*Wilkerson's "Ancient Egypt,"* vol. ii., p. 368.

SAHARA.—"Dates are not only the principal growth of Fezzan oasis, but the main subsistence of the inhabitants. All live on dates—men, women and children, horses, asses and camels, sheep, fowls and dogs."—*Richardson's "Travels in the Great Desert,"* vol. ii., p. 323.

NUBIA.—"We have another example of a race subsisting entirely upon animal food in the Arabs who inhabit the Nubian desert—a district which consists principally of hills, varying from 1000 to 1800 feet high, and is destitute of all vegetable products suitable for human food. Their camels subsist on the thorny shrubs growing among the rocks; and the milk and flesh of these animals (with salt) constitute their sole ordinary food."—*Odontological Society Transactions,* vol. ii., New Series, p. 45.

ABYSSINIA.—"An instinctive feeling, dependent upon the pleasures of a state of warmth, has taught the Abyssinians that the flesh of animals eaten raw is a source of great physical enjoyment by the cordial and warming effects upon the system produced by its digestion. The eating of raw meat, however, is considered a luxury, and is only indulged in at festivals. They are great meat-eaters, however, and suffer

greatly in their health from the difficulty of obtaining salt.”—*Johnson's "Travels in Southern Abyssinia,"* vol. ii., pp. 175, 226.

DAHOMEY.—“The food of this people is simple, consisting of messes of meat and vegetables, mixed with palm oil and pepper, with which is eaten a corn cake called kanke.”—*Forbes' "Dahomey and the Dahomans,"* vol i., p. 29.

THE WARARI.—“Are small and shrivelled black savages. The principal articles of diet are milk, meat, and especially fattened dog's flesh, of which the chiefs are inordinately fond, maize, holicus and millet. Rice is not grown in these arid districts.”—*Burton's "Lake Regions of Central Africa,"* vol. ii., p. 273.

WAMRIMA OR COAST CLANS.—“Their food is mostly ugali, the thick porridge of boiled millet or maize flour, which represents the staff of life in East Africa. They usually feed twice a day, in the morning and at nightfall. They employ the cocoa-nut extensively; like the Arabs of Zanzibar, they boil their rice in the thick juice of the rasped albumen kneaded with water, and they make cakes of the pulp mixed with the flour of various grains.”—*Burton;* vol i., p. 35.

EAST AFRICANS.—“The principal articles of diet are fish and flesh, grain and vegetables; the luxuries are milk and butter, honey, and a few fruits, as bananas, guinea-palm and dates. The Arabs assert that in these latitudes vegetables cause heart-burn and acidity, and that animal food is the most digestible. The Africans seem to have made the same discovery. A man who can afford it almost confines himself to flesh, and considers fat the essential element of good living.”—*Burton,* vol ii., p. 280.

CABANGO.—“The chief vegetable food is the manioc and lotsa meal. These contain a very large proportion of starch, and when eaten alone for any length of time produce most distressing heart-burn, as we ourselves experienced in coming north. I now discovered that when these starchy substances are eaten along with a proportion of ground nuts which contain a quantity of oil, no injurious effects followed.”—*Livingston's "Travels and Researches in South Africa,"* p. 458.

KAFFIRS.—“The principal diet of the Kaffir is milk, which he eats rather than drinks, in a sour and curdled state. One good meal a day, taken in the evening, consisting of the cur-

dled milk and a little millet, is almost all that he requires, and with this he is strong and vigorous, proving that large quantities of flesh food are by no means necessary for the sustenance of the human frame."—*Simond's "Curiosities of Food,"* p. 39.

(To be continued.)

Reflections from the Surgery.

A CASE OF GENERAL HYPERTROPHY OF THE GUMS, CAUSED BY DISEASED TEETH.

By HENRY EVANS, L.D.S.,

DENTAL SURGEON TO THE TENBY COTTAGE HOSPITAL AND PEMBROKE
INFIRMARY.

ABOUT six months ago a gentleman consulted me, suffering from general hypertrophy of the gums. It was a somewhat extreme case, the upper gums being increased so considerably as nearly to cover the crowns of the teeth, and interfering so seriously with the function of mastication that it was only with great difficulty that he could perform that duty. The gums were of a purple colour, with thick and rounded margins, and a discharge of purulent matter, exhaling a most offensive odour, oozed from their inner surfaces. They bled profusely from the slightest touch, and were so sensitive that the least pressure was attended with excruciating pain. The peculiar itching sensation so often present in this disease was also a source of great annoyance. There could be no doubt but that the condition of the gums was due to dental irritation, set up by the second right superior bicuspid, and the left second and third molars, which were much decayed. I advised extraction, which was submitted to; and on the following day I removed the growth, fungiform in character, by making a horizontal incision entirely through the diseased gums to the crowns of the teeth, and as far back as the growth extended, subsequently freely scarifying the gums, several times at intervals of four days, and prescribed a gargle of dilute phenate of soda, to be used thrice daily. This, together with attention to the regimen of the patient, and perfect cleanliness of the teeth, soon effected a cure.

British Journal of Dental Science.

LONDON, NOVEMBER 1, 1883.

It is with great pleasure that we record the election of John Smith, M.D., F.R.C.S., Surgeon Dentist to Her Majesty the Queen in Scotland, &c., &c., to the Presidential Chair of the Royal College of Surgeons, of Edinburgh.

Dr. Smith's appointment, following within a year his appointment as President of the Odonto-Chirurgical Society, and British Dental Association, is an honour alike to the recipient and the profession of which he is so illustrious an ornament. Those who have had an opportunity of knowing Dr. Smith must feel how wise a choice has been made by the College of Surgeons, and how gratifying that the high estimate of his talents entertained by Dr. Smith's friends, should thus be endorsed by so representative a body as the Royal College of Surgeons.

The relations between the profession at large and Dental Surgeons cannot be too cordial; and we may regard as earnest of even closer ties of union that so eminent a specialist among Dental Surgeons should have been selected to hold so honourable a post.

We believe that the greater the interchange of cordialities between the profession generally, and the closer drawn the bonds of brotherhood, the greater will be the benefits accruing to all surgeons, be they specialists or not. We have always believed in "Independence and Liberality," and so are more pleased to find that others have adopted and acted upon these watchwords, and have laid their hands upon a man whose character has always endeared him to his fellow-workers, and obtained for him the respect and admiration of all who have been brought into contact with him. We have it freshly in our minds that the sister college of London but recently accorded to a specialist a similar honour to that

which Dr. Smith has just had conferred upon him, and it may be that his election will prove but a step towards like honours for his more southern brethren.

There can be no doubt, we think, that many points of difference both in methods of dealing with one another and with patients, every now and again crop up and have, in bygone years, led to some slight acerbity and rancour between the ranks of the profession. As time goes on, however, a clearer insight is gained by all alike into the true objects and just *status* of surgery—never matter to what portion of its wide domain men decide to concentrate their energies. Dr. Smith's election cannot, therefore, but tend to increase this desirable consummation, when all alike shall help in forwarding the one and united aim of modern surgery, and shall forget the mere trivial difficulties which have so often hindered coalescence and fellow-feeling. We are confident that the lines we have briefly indicated will form more or less the programme of our illustrious fellow-surgeon's course of action, and that the result will be a source of gratulation alike to the profession at large and to Dr. Smith himself.

We again venture to offer to the profession and to Dr. Smith our congratulations upon his election.

EFFECT OF DIET UPON THE TEETH.—M. l'Abbé Moigno, writing in "Le Monde," says: "We have demonstrated the advantages of black bread over white, as preservative of the teeth, and the following observation lends itself in support of this view. A correspondent of the 'New York Herald,' and the commission sent to investigate and report upon the equipment of the 'Jeannette,' were much struck by the beauty of the teeth of the natives of Northern Siberia. They found, even in men of sixty and seventy years, complete sets of teeth, at once white, small, and pearl-like, and absolutely sound. Caries and tooth-ache are alike unknown. A medical man of Yakutsk attributed this preservation of the teeth to the habits of the people, and the character of their food, of which black bread formed the staple, as well as to the care taken of the teeth during infancy. Firstly, the teeth are never subjected to the action of sugar,

in any form whatsoever, and for the very good reason that they never have the chance of buying it. And secondly, they daily consume a large quantity of butter-milk, which drink is alike antiscorbutic and antiseptic; and finally, after each meal they are in the habit of chewing a resin, prepared from a species of spruce, which has the flavour of tar, and this to the intent of dislodging from the teeth and gums all *débris* of food. This gum or resin, which is prepared and sold by the chemists of Siberia, is largely used by Russian ladies. What a contrast truly between the wisdom of these natives and the routine carelessness of the vast majority of the people of our dear home, fair France! In how many villages even rich, and in those less well to do, do we find sound teeth the exception, and men and women almost edentulous at the age of thirty, or even twenty years!"

UNDOUBTEDLY the teeth suffer more or less during prolonged sickness, partly from lack of nourishment at such a time, partly from medicines, but mostly from lack of cleanliness. Although at such times the physician is the one to whom the case is entrusted, we should do *our* share toward the patient, if in no other way, at least, by reminding them of the care the teeth need. In cases of serious moment, acute cases, or where the life is in danger, these smaller matters may be left at rest; but such dangerous periods are of short duration, as the main reason of the ruin of the teeth during and after sickness is the lack of resistance on the part of the teeth, diseased fluids of the mouth, and in nearly all cases the neglect of cleanliness, permitting food and epithelial cells to decompose, and thus perform their pernicious work. To eliminate the first cause will fall within the province of the physician, by prescribing such diet as tends to strengthen the system and remedy the secretions, and counteract their destroying influence. At the same time cleanliness of the mouth will be necessary, in order to prevent the action of medicines while passing through the mouth. In cases of severe illness, the patient will be likely to be too weak to apply the brush and mechanical means of removing foreign matters, therefore it will be best to resort to mouth-washes, and the more simple the washes are the better. All perfumed or elaborately pre-

pared washes should be discarded, as the sick always prefer the simplest of everything. The only one of our antiseptics which is disagreeable to patients, carbolic acid, can be supplemented by others more agreeable.

For a mouth-wash the permanganate of potash will be found serviceable (1 part permanganate of potash, 100 to 150 parts of water), to which can be added some camphor, as the metallic taste is disagreeable; a solution of boracic acid one in 20 or 30; or the following: Tinct. of benzoin 10 parts, tannic acid 20 parts, alcohol 30 parts, oil of peppermint a sufficiency. Put 10 to 20 drops in a glass of water. In order that some benefit be derived from these washes, they should be held in contact with the teeth at least for one minute. Medicines containing iron should be taken through a tube.

WE are pleased to learn that, acting upon a principle we suggested in our issue of Aug. 1st, the Wrexham authorities have appointed Mr. T. H. Coleman, F.C.S., as Surgeon Dentist to the Union. Mr. T. H. Coleman's, is we believe, the first appointment of its kind, and we may hope it will prove a precedent, and so abolish a most gross omission on the part of the authorities who sit in high places and administer scant justice to such public institutions as workhouses and schools.

PRIMARY scirrhus affecting the upper jaw is so rare that some authorities have denied its existence. That such tumours do exist there can be little doubt. Heath, whilst stating he has not met with a case, believes in their occurrence. It is interesting in this connexion to notice that a case of undoubted scirrhus affecting the upper jaw of a child, aged two years, is reported in the "Bristol Medico-Chirurgical Journal" for July, 1883. Mr. Pritchard removed the jaw and the patient did well.

A CORRESPONDENT writing to the "British Medical Journal" states, that a death from chloroform-poisoning occurred recently at Whitehaven. An inquest was held on the body of Robert Falcon, aged 45, who attended at the surgery of Mr. Muriel, a surgeon of that town, with the intent of

having a tumour removed from his lip. While Mr. Muriel was administering chloroform his patient became livid and, in spite of restoratives, died immediately. "The medical men who made a *post mortem* examination stated that death had resulted through chloroform, which had been properly administered, but that it had acted upon the nerve-system causing stoppage of the heart's action." Mr. Falcon had taken the anæsthetic with impunity upon previous occasions.

DEATHS are multiplied, and yet the laity, as well as the profession at large, refuse to read aright the lesson such mortality should bring home. Mr. Muriel doubtless possessed all the knowledge and skill which falls to the lot of busy practitioners; but neither he nor any man in general practice should undertake anæsthetising without special training and constant practice. The mere rules of thumb now in vogue, and which are repeated *ad nauseum* in manuals upon the subject, do not, and cannot, guide a man in the arduous and responsible duties of an anæsthetist. If any man should be an expert and a specialist, the administrator of anæsthetics should be. A mere perfunctory examination of the heart by the stethoscope is not enough—a thorough knowledge, both of the medical and surgical aspects of the case, is essential.

THE number of years which must be spent in study before obtaining a degree in medicine in various countries are as follows: Sweden, ten; Holland, Italy, and Switzerland, six; Norway, eight; Denmark, six and seven; Belgium, six; Russia, Portugal, Austria, and Hungary, five; France, England, and Canada, four; United States, three and two; and Spain, two.

BITTER and nauseous saline medicines may be administered without inconvenience if ordered to be taken as follows:—A mouthful or two of *iced water* should be taken immediately before the dose, or after, and the dose itself in a wine-glassful of iced water. The iced water seems to blunt the sense of taste.

Bromide of sodium may in the same way be given in half grain doses, dissolved in plenty of water. Few remedies are

better in cases of children feverish and suffering from nervous exhaustion consequent on teething.

HOT WATER IN CHLOROFORM NARCOSIS.—Dr. A. Holmes, of Clinton, N.C., directs that cloths be dipped in hot water and applied to the head, and so continued until reaction is established. He says he has used this agent frequently, and always successfully, and on one occasion when the ordinary means had failed.

A CEREMONY took place on Thursday, the 18th ult., which must possess interest alike to all medical men throughout the thinking universe. We refer to the removal of Harvey's remains from the dilapidated vault in which they have rested since 1657, to the handsome sarcophagus which had been placed in the "Harvey Chapel"—a memorial sanctuary to the family which exists in the parish church at Hemel-Hempstead. The original lead coffin, which was much damaged by time and Vandalism, has been repaired, while a case made of the same metal has been constructed, and in it placed an edition of Harvey's works. The ceremony of translating the remains was impressive and reverent. To none could the duty of preserving and honouring the dust of so great a man be intrusted more appropriately than to the College of Physicians, and the College, alive to the solemn character of their self-imposed task, have performed their function in a manner worthy of him whose memory they seek to perpetuate and of their own *prestige*.

WILLIAM HARVEY was born at Folkestone, in 1578. In 1619, he promulgated his conclusions concerning the circulation of the blood, and thereby established for himself a name as undying as that of Galileo or Newton. In 1883 it is hard to believe that William Harvey was laughed at and pointed out as a visionary and dreamer of dreams, only some three centuries ago. Would that we possessed such dreamers now-a-days.

MR. HENRY A. BRASSEY, M.P., has given £100 to the Dental Hospital of London.

THE following are the entries of fresh Dental Students at the various London Hospitals:—Charing Cross, 7; Middlesex, 9; Dental Hospital of London, 18; National Dental Hospital, 10. This gives us a total of 43—a number which must be greatly below the number of genuine Dental *alumni*.

IT is a matter of regret that in those London general hospitals to which specialists are appointed, there is so little systematic teaching and so little use is made of the material either for mere clinical didactics or instruction in the morbid anatomy of the Dental structures and their congeners. At present—in too many cases—teeth are “snatched untimely” from the jaws of the uninitiated, by the prentice hand of “the dresser for the week.”

TEA in excess is bad—infusions of tea when freshly prepared and drunk *au naturel*, as in China, probably act beneficially as a “pick-me-up,” after prolonged mental strain—both clearing the brain and initiating a sensation of general well-being, conducive alike to comfort and repose. Tea is too exhilarating for some; tea as a decoction—made into “stock,” and kept going all day, as among the lower classes, is of course most harmful, the astringency of such draughts being highly provocative of dyspepsia.

WHAT SHALL WE DO WITH CHLOROFORM?—In a discussion of this subject before the Baltimore Medical Society, Dr. Erich said that “one reason of the opposition to the inhalation of ether was that very few knew how to use it.” He said that “by excluding air we could get the patient under ether in three minutes—on the average, quicker than chloroform.” “The patient must be prepared for a feeling of suffocation at first, and his hands must be held for a few breaths.” “If he understands fully what is being done, he will co-operate.” “After he gets under the influence of the agent, we may give air as freely as we please.” “The opposition to ether would cease if the proper method of its administration were known and practiced.” He employs Rohé and Leonard’s India-rubber bag, with mouth-piece, for its administration.

Manipulative Miscellany.

All instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month; they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits, and without any intention or wish to put one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

FERNALD'S RUBBER DAM HOLDER.

MESSRS. COTTRELL AND Co. have favoured us with a sample of the above, which, from its extreme simplicity, will be constantly useful. It consists of a plated wire, forming three sides of a square of four inches wide. At the two angles the wire is coiled once, forming a spring. At the two extremities, and at intervals all along the wire, are fixed T-shaped fastenings for the rubber. The method of application is to adjust the rubber dam on the tooth, place the wire frame over the mouth with its free ends upwards, and stretch the rubber as required, slipping it over as many of the T fastenings as may be convenient. This, without tying or weights, keeps the dam in the convenient form of a hollow cone.

MR. BROWNLIE'S SUCTION VALVE.

MESSRS. C. ASH AND SONS are introducing a new suction valve, designed by Mr. Brownlie, of Glasgow, which can be adapted to either gold or vulcanite cases. It consists of a shallow cup of gold, having four little apertures at the bottom and a short screwed wire rising from its centre. Into this cup a vulcanized ring or washer is to be placed, and a little plate of gold, which screws on to the pin, covers all very neatly and leaves a practically smooth palate.

For use, in gold palates, the cup is to be soldered into the crown of the suction chamber; in vulcanite plates it has to be

tied with binding wire, through the four little holes, to the palate of the model pierced through for the purpose, and the vulcanite baked on to it.

MR. J. WILLIAMS' ELEVATOR.

THIS instrument is of peculiar formation, being exactly in form of a boot-hook, except that where the usual little knob occurs it is sharpened to a chisel edge and cut into three teeth. It is to be used by having this edge forced below the gums on the lingual margins of stumps, and the hand raised, when it acts as a lever resting on the alveolar ridge as a fulcrum, and thus giving the stump an upward (or downward) motion lifting it from its socket, when if necessary it can be used as a simple hook to draw the stump completely out. Messrs. C. Ash and Sons are the manufacturers.

Review.

Dictionnaire Encyclopédique des Sciences Médicales. Edited by Dr. DECHAMBRÉ. Tome XXVII., Part I., Dent—Dent.

THE whole of this volume is almost exclusively devoted to Dent (tooth) and Dentaire. The writer divides the subject tooth into seven chapters. In the first, descriptive anatomy, he gives us a very full account of the anatomical characters of the teeth. The second chapter is devoted to histology, and here we find a good description of the microscopical appearances of the various tissues. Tomes's views as to the nature of Nasmyth's membrane are adopted in preference to Kœlliker's.

The comparative anatomy of the teeth forms the subject of the third chapter, which is written in conjunction with Dr. Chauveau. The numerical characters of the teeth are first given; and secondly their seat, direction, and relations to the neighbouring parts. Their dimensions, length, breadth, and volume are next considered, and lastly, we have a clear description of the various forms of teeth.

The fourth chapter, physiology, is one of the best and most complete of the whole work. It commences with the discussion of the origin and formation of the tooth follicle. The author's experience is based on a series of dissections of early embryos. The first was 3 centm. long (7th week), and presented no vestige of epithelial lamina. The next one was 5.5 centm. long (2 months); the enamel organ and tooth-papilla could both be very easily distinguished, and an important point noticed was that the follicles of all the milk-teeth were at precisely the same stage of development in both jaws. In another embryo, 20 centm. long, the author was able to make out the first traces of the secondary epithelial cord, *i.e.*, the germs of the enamel organs of the permanent teeth. The epithelial outgrowth for the wisdom tooth is said to be formed from the cord of the second permanent molar, and to first make its appearance towards the third year.

All the author's researches on this point show the analogy which exists between the formation of the tooth and hair follicles.

The growth of the various dental tissues is then treated in detail, and in the paragraph on the formation of dentine, we are told that the continuity on the one hand, between the dentinal fibrils and the odontoblasts, and on the other, between the odontoblasts and the terminal twigs of the dental nerve, have been satisfactorily made out, being thus fully explained the sensitiveness of all parts of this tissue.

The cement is said to be derived in those animals, the crowns of whose teeth are surrounded with *crusta petrosa*, from a special organ, but in man, where it only exists round the roots of the teeth, to be formed by the wall of the follicle, which becomes the dental periosteum. This bony tissue is produced either by the true ossification of the periosteum itself or as a secretion from a layer of cells, Lussenbaur's osteoblasts, on the deep surface of this membrane.

The laws of dentition are next discussed, and we are told that there are no examples on record of either a third or fourth dentition. Some weighty arguments are brought forward against Darwin's views, which are also shared by Mantegazza and Broca, on the cause of the non-eruption of the wisdom tooth, *viz.*, that it is a degenerating organ; the

author inclines to the belief that this failure is rather to be attributed to the want of development of the jaws. Further, that a diminution in the number of teeth must be looked upon as a sign of degeneration in a race, but that the increase points to a degree of inferiority directly proportionate to the amount of ethnical prognathism, or obliquity of the jaws.

The pathology of the teeth forms the subject of the sixth chapter. Pathology must be here taken in its French extended sense of etiology, morbid anatomy, and symptomatology.

The various malformations of the Dental apparatus are first very clearly described. Some curious instances are given of migration or malposition of teeth in various parts of the body. The treatment recommended for the different irregularities is chiefly mechanical, but the author expresses himself strongly in favour of the surgical treatment, *i.e.*, luxation and turning, in appropriate cases. A very full description is then given of the numerous forms of erosion; but the views expressed as to their nature and cause will hardly meet with much support here. We fail to find any mention of the co-existence of interstitial keratitis with the so-called Hutchinson's teeth. The author ascribes all these malformations to the effects of eclampsia.

The affections of the teeth as a whole are next passed in review, and we then come to those of the dental tissues separately. The subject of caries is considered in another article, "caries dentaire," and so passed over very lightly here. But we have a very exhaustive description of all the complications which may occur in the course of affections of the teeth.

In the chapter on operative medicine full details are given for the performance of most of the operations performed on the teeth, but we should say that the remarks on gold filling hardly do justice to the subject. Chromic acid is recommended as the best hæmostatic in cases of hæmorrhage after the extraction of teeth.

The subject of transplantation of teeth is fully discussed, and very good rules are given for its performance.

The last chapter treats of anæsthesia in its relations to operations about the mouth. The various modern agents are

described, with their modes of administration. The author expresses himself decidedly against the use of nitrous oxide gas. His experience of the feelings and sensibility of patients whilst under the influence of this anæsthetic, is quite opposed to our own, and that of the generality of practitioners.

The next article, *Dentaire* (Hygiene), which is written by the same author, treats of the hygienic rules for the preservation of a healthy state of the mouth and teeth.

In conclusion, we would state, that though we venture to differ *in toto* from some of the views expressed in this work, it has seldom been our privilege to read a book which has afforded us more pleasure and instruction, and one in which all, even opposed theories, are so ably and temperately discussed. The few illustrations, especially those of the microscopical appearances of the various dental tissues, are remarkably good, and we can only regret that their number is so small, in consequence no doubt of the form in which the work is published. We congratulate Dr. Magitot on this valuable addition to his long list of writings on the subject of Dental Surgery and Pathology, and we advise all our readers who have a knowledge of the French language, to take the earliest opportunity of acquiring a copy of this work.

Literary Notices and Selections.

TARTAR, AND ITS REMOVAL FROM THE TEETH.

By THEODORE F. CHUPEIN, D.D.S., Philadelphia.

THIS is a subject which should claim more attention from the Dentist than it generally does.

As a general rule the text-books treat the subject with only a passing notice. The last edition of "Taft's Operative Dentistry," devotes but a few pages to the entire subject, while the instruments illustrated therein for its removal are clumsy, old-fashioned, and ill-adapted to the operation.

Many valuable teeth are lost by becoming coated with this substance, which, not being removed while in the soft or chalky state, assumes a hard, sometimes a flinty, consistency, gradually

pushing away the gums before it, causing them to bleed at the slightest touch, giving rise to fetid breath, and eventually causing a recession of the gums, an absorption of the sockets, thereby leaving the teeth with no firm support, when they loosen, and become in this state such a source of annoyance, and sometimes of pain, as to demand their removal. Even before the case has assumed such proportion as is related above, a careful examination will show, high above the free margins of the gums, rings or nodules of hard tartar, and the teeth slightly loose. If the case be taken in hand at this point there may be a chance to restore it to a normal condition by removing *all the tartar*; but if it be permitted to encroach until it reaches the alveolar border or beyond the reach of the instruments used for its removal it becomes almost impossible of removal, or so painful that the patients cannot or will not submit to its entire removal: while in those who do submit to the operation the flow of blood from the irritated gums is so excessive as to leave the operator in doubt as to whether the work has been thoroughly performed. We have seen cases where the teeth have been so encrusted that they have actually been hidden from view by excess of the deposit, and to remove the tartar when it has been allowed to increase to this extent would be equal to the extraction of the teeth; for bound together in this condition the tartar alone held them in the mouth, and if it were removed the teeth would fall out from the lack of support.

It is not our intention, in this essay, to go into an explanation of the constituents of tartar, its analysis, or the proportion of animal and mineral matter it contains, or of such general facts in relation to it as are well known to both the student and practitioner of Dentistry. We purpose merely to offer some thoughts on the subject, as well as some practical suggestions for the cleansing of the teeth that have become coated with this substance.

Tartar is an elimination of the saliva, and attaches itself—after becoming precipitated—to the teeth nearest the salivary ducts, from which the saliva flows into the mouth. Thus we find it most excessive and attached to the first and second upper molars, on each side, on their buccal surfaces, and to the lingual surface of the lower incisors and cuspids, these

teeth being most contiguous to the superior and inferior salivary ducts.

If the food were vigorously chewed it is doubtful if tartar would collect on the teeth at all. In evidence of this it is seldom found on the teeth of habitual tobacco chewers or on the teeth of such domestic animals as horses, sheep, goats, cows or other ruminantia, while this assumption is still farther corroborated in the evidence we all have had of patients, who having an aching tooth on one side of the mouth, chew their food entirely on the other side to avoid pain, when we find that the teeth on the side which has been inactive becomes thickly coated with tartar, while the other side, where the teeth have been vigorously used, is almost or entirely free from any deposit.

It is not always, however, that these teeth which are in the immediate vicinity of the salivary ducts become coated with tartar. We find it at times showing a peculiar fancy for one particular tooth remote from these points; sometimes a central incisor or lateral of the upper jaw being a victim to the overweening affection of this insidious destroyer, while the other teeth where we might expect it are comparatively free of this deposit, and thus many a beautiful tooth, "without spot or blemish" of decay, has to be removed from looseness caused by the tartar having insinuated itself so far on to the root as to produce absorption of the socket, destruction of the investing membrane, the recession of the gum, and as a consequence of these, the loss of the tooth.

We find an absence of tartar in certain forms of dyspepsia; the frequent acid eructations of this disease seeming to act on the mineral constituents of this substance, thereby keeping the teeth free from any excessive deposit. In pregnant women, too, there is sometimes an absence of any large accumulation of tartar on the teeth. This may be attributed to a like cause: for there seems to be inseparable to this state so strong an acid condition of the system that one lady is wont to speak of a friend or acquaintance in this condition as being "off on a vinegar voyage."

Physiologists have not as yet determined the use of tartar.

Tartar takes its name from its resemblance to an incrustation found on the inside of wine casks.

Tartar is recognized under three colours—black, green and yellow. Black tartar is principally found in the mouths of smokers, and probably derives its colour from the stain eliminated by the nicotine in the smoke. Green tartar is supposed to be yellow tartar which has become more dense with age. Yellow tartar is most probably the second stage or formation of the first precipitate, which is found on the teeth by a cream-coloured, softish deposit, easily removed with the tooth-brush. There seems to be no chemical difference in the composition of the three varieties.

We find the surface of tartar which lies next the cheek or tongue to be smooth, while that which is contiguous to the gum is rough. Additions are generally made to the rough parts, which accounts alike for the great disposition of the gums to bleed at the slightest touch, as well as to their gradual recession, as new deposits are added.

When tartar is of a chalky consistency it may be readily removed with almost any of the small scalers made for this operation. It is only when it has become very dense, and is almost out of sight and out of reach, that its removal becomes difficult and calls for the employment of delicate instruments and much patience for thorough work. In this condition and position acids have been suggested for its solution, but we have felt timid of resorting to these, as we felt that an acid that would dissolve the tartar might dissolve the tooth.

While filling teeth to which the rubber dam had been applied, over several we have frequently noticed rings or nodules around the teeth that were entirely out of sight and not suspected, over which the dam had worked itself. It occurred to us, therefore, that it might be a good plan to apply the dam to assist in the removal of tartar. We frequently do this, and by its aid are enabled to make very thorough work of cleansing the teeth of tartar.

We seldom attempt the removal of all the tartar at one sitting. When in a chalky condition, around the lower teeth, it is our practice to remove as much of this as we can from all the surfaces, using those thin, flexible scalers that are now found at the depots to cleanse between the teeth. These pass readily through at the necks of the teeth, and with them very thorough work can be accomplished, except when the blood flows so

freely as to obliterate the view. At the next sitting it is a good plan to apply the dam over six, eight or ten teeth, forcing this down on to the soft, flabby and yielding gums, and applying ligatures to each tooth. After a time the dam becomes very adherent, and the ligatures may be removed; and when found necessary the dam may be insinuated still farther on the teeth by forcing small pieces of spunk between the teeth. In this way, and with the aid of a mirror, well-tempered, sharp and nicely-made scalers, all the tartar can be removed, and this, too, with none of the annoyance of the free flow of blood from the gums which so frequently defeats the thorough performance of this operation, and likewise preventing the patient's poking the tongue in the way of the operator. The rubber dam is prepared by punching six, eight or ten holes, three-sixteenths of an inch apart, and in the form of a semi-circle. It is first stretched over one tooth, on the right or left side and held down by aid of a clamp, then stretched over the next tooth, and the next, until all are completely encircled. They are then each ligated, one by one, and then the clamp may be removed. After the dam becomes adherent the ligatures may be removed, one by one, and each tooth thoroughly cleaned as each ligature is removed.

It may not be generally known that tartar is frequently more easily removed by *pushing it* than by *pulling it*. A small nodule will often defy a most vigorous pull to dislodge it, while it will yield most readily and instantly to a delicate push.

Tartar sometimes shows itself by a darkened colour on the gums, or indicates its presence on the tooth by a bluish line; or, the tooth, on being taken between the thumb and finger, is observed to be slightly or considerably loosened. To any of these indications it is safe to apply the dam as recommended. The pushing up of small pieces of spunk produces an absorption of the gums, and the dam gradually follows, when pieces of tartar heretofore invisible are brought into view, and are readily and easily removed.

Green tartar, or green stain, differs from the salivary calculus by being corrosive in its action. It is not often observed on the teeth in middle or advanced life, but mostly affects the teeth of children about the tenth, twelfth or four-

teenth year of age. It is most generally found on the four or six upper front teeth. By means of soft rubber or wooden wheels charged with fine pumice and driven by the dental engine, green tartar may be readily removed.

There is a condition of the gums brought on, we think, by the accumulation of tartar. We find them red, hot, soft, flabby and spongy; bleeding profusely at the slightest touch and hanging in loose, puffy folds about the teeth, to which they have no adhesion. The flow of blood from them is so excessive that it is next to impossible to do anything towards cleansing the teeth when the gums are in this condition. The tartar on these teeth is not hard or even chalky but soft and glutinous; the saliva is viscid and ropery. In such cases it is our practice to deplete the gums freely. All the loose, flabby folds between the teeth we remove. This is best and quickest and painlessly done with a pair of sharp, curved-blade, pointed scissors. These are passed, with a blade on each side of the loose fold of gum, between the teeth, and with a quick snap of the handles the congested gum is taken off. After the gums are well rinsed with cold water and the bleeding stopped we apply to all the incised places a little "iodide of zinc," taken upon a moistened camel-hair pencil, or on a swab of moistened cotton floss. This iodide of zinc should be kept in a well-corked bottle, as it rapidly absorbs moisture from the atmosphere and runs into a semi-fluid state. At the next sitting the case will be in a better condition for the removal of the soft or mucilaginous tartar that will be found around the necks of the teeth, which will be best removed, as suggested, by the aid of the rubber dam.—*The American Journal of Dental Science.*

THE ORIGIN AND GROWTH OF TEETH.

By SALLIE STRASBURG, Cincinnati, O.

(Continued from p. 982.)

This constitution of the follicle, with these three fundamental parts, seems to be characteristic of man, and of all mammals whose teeth are not supplied with coronal cement.

But in the follicle of the soliped it will be seen that a long time before the formation of the first dentine cap, there exists,

between the follicular wall and the organs within it, a new tissue differing in colour, consistence, and composition. Upon this tissue will depend the formation of the cement.

This cemental organ which will always be found in the follicles of the molars of herbivorous animals, and in those of the incisors and molars of solipeds, has been described for the first time in France in a work by E. Magitot in 1858. It was presented anew some years later by Robin and Magitot in 1861. Since that time this organ seems not to have been recognized by any other anatomist.

In the last works published in Germany by Kolliker, Waldeyer, Hertz, Kollman, and others, its existence has been denied.

The dental follicle now has a general ovoid form. Its size varies greatly in different species of animals, and according to the kind of teeth to be developed from it. When the follicle is completely formed it remains inclosed within the embryonal tissue of the jaw, with which, at first, it is connected. Having lost its communication with the mucous membrane, by the rupture of the cord, it does not, as yet, form any connection with the maxillary bone. The formation of the alveolar partitions does not take place until a later period.

The network of vessels which ramify the follicular wall and dental bulb are furnished from the surrounding parts, while the enamel organ is non-vascular.

The direction of the great axis of the follicle in man, and the carnivora, is vertical, while in the herbivora it takes an oblique and divergent course which is particularly marked in the follicles of the incisors, and which is in conformity with the inclination of the alveolar arch for each species. As soon as the sac is closed and the follicle becomes isolated by the rupture of the cord, various changes take place in the embryonal tissues that surround this organ, located between the apex of follicle and the epithelial lamina and cord.

The cells composing the epithelial lamina become greatly increased in number at the severed point, resulting in irregular buddings, which meander in different courses into the deeper portions of the embryonal tissue. These buildings, differing in form, occasionally present that of cylinders, which retain their connection with the primitive lamina, but frequently this connection is absorbed and an epithelial mass is set free.

Occasionally clusters of these masses take the globular form, resembling those which have been discovered in the lamina itself. These different freaks of nature account for the various forms of these epithelial masses, which heretofore were unexplained, and which are found in all sections of the jaws, at this period of evolution, when they finally become absorbed and disappear, before the development of the tooth is completed.

Coincidentally with the absorption of the epithelial lamina, changes precisely analogous transpire in the severed cord. From the remnant of this cord processes are given off which, at times, become quite numerous, and remain for a considerable length of time, even up to a period verging on the eruptive stage. The form of the processes varies, occasionally having the appearance of a bouquet, which spreads and continues to expand till it reaches the vicinity of the epidermis. At times they form numerous anastomoses, in the midst of which are found isolated masses. The tendency of these groups is towards the mucous membrane, and not in the direction of the lamina or the cord.

The remains of the cord and lamina are composed of the same polyhedral cells as the cord and lamina, but are never invested with a layer of prismatic cells. While this phenomenon of budding is taking place in the cord and lamina, a similar process is going on at the external surface of the follicular wall. The constituents of the follicular bourgeon are the same as those on the cord.

This sameness of structure results from the fact that these epithelial masses are derived from the remains of that portion of the cord which is nearest in proximity to the follicle, and which by multiplying themselves, finally constitute the reticular covering of the follicle. All these phenomena of epithelial proliferation relate to one and the same process, all finally disappear by absorption, unless it be some masses that may become the *enamel organs* of supernumerary teeth.

Drs. Legros and Magitot maintained that the supernumerary teeth originate either from the epithelial lamina, from supernumerary buddings, arising between the normal number; or that they are off-shots from the epithelial cord. In the first case the development of these teeth would be precisely

similar to those of the deciduous teeth; in the other, to that of the permanent teeth, with the exception of the first molar.

Dr. Magitot has since modified his views; they are, at present, in accordance with those advanced by Kollman, and are based upon the well-known fact that when the epithelial cord or neck, which connects the enamel organ with the epithelial lamina becomes severed by the closure of the follicle, the cells of which the cord is composed multiply to a greater or less extent, at their severed extremities.

These epithelial proliferations occasionally continue adherent to the remains of the cord and to the follicle itself, until they are absorbed. Sometimes considerable masses become detached and assuming various forms, wander into the depths of the jaws. The epithelial proliferations, according to Kollman and Magitot, may become the enamel germs from which the supernumerary teeth originate.

Now, in order that such a tooth may be produced, a supernumerary dentine papilla must be provided for this adventitious enamel organ. This would result as a natural consequence if the theory advanced by M. S. Dean is correct. In a paper by Dr. Dean, it was maintained that dentine papilla may originate from any point of the dentinal sheet of tissue (as described by Dursy), with which the epithelial mass comes in contact; that it is solely through the influence of the enamel organ upon this tissue that development of the dentine papillæ is induced.

(To be concluded.)

WE are informed that the Archbp. of Canterbury, who underwent a successful operation for fistula *in ano*, on the 20th ult., was at the time under the influence of nitrous oxide gas, which was administered by Mr. Rymer. The portable gas apparatus was regulated by Mr. Steele. Profound anesthesia was induced in 55 seconds, when the gas was turned off, and air admitted for a period of 10 seconds. The gas was again turned on for 20 seconds, when the operator, Dr. Carpenter, announced the operation completed. Recovery was good. From the commencement of the inhalation to complete recovery, about three minutes elapsed.

Reports of Societies.

TRANSACTIONS OF THE STUDENTS' SOCIETY OF THE DENTAL HOSPITAL OF LONDON.

ORDINARY GENERAL MEETING, HELD OCT. 8TH, AT 7 P.M.

STORER BENNETT, Esq., President, in the Chair.

THE minutes of the previous meeting were read and confirmed.

Messrs. W. J. England, Lloyd, Williams, G. G. Campion, S. Peall, and T. G. Read were elected members of the society.

The following gentlemen were proposed for membership: Messrs. C. Rilot, J. P. Smith, C. Barstow, A. L. Goadby, C. Winterbottom, G. Collett, F. Omeara, L. Jeffery, R. May, G. O. Richards, and H. Murray.

On the PRESIDENT asking for casual communications, Mr. Fox showed two specimens of erosion.

The PRESIDENT then called upon Mr. McAlpin to read his paper on "Anæsthesia."

The discussion which followed was opened by the PRESIDENT, and continued with much interest by many of the members present; amongst whom were Messrs. A. Kirby, Marcus Davis, R. W. Stainer, G. Harding, C. D. Davis, W. Hern, C. Robbins, H. Baldwin, and W. A. Turner.

After passing a vote of thanks to the reader of the paper the President dissolved the meeting.

ODONTO-CHIRURGICAL SOCIETY OF SCOTLAND.

THE first meeting of the session will be held at the Dental Hospital, 30, Chambers Street, Edinburgh, on the evening of Thursday, Nov. 8th, at eight o'clock, Andrew Wilson, L.D.S.Ed., in the chair. Council meet at 7.30 p.m.

Private Business.—Nominations.

General Business.—Introductory Address by the President.

Cases of interest will be taken after the address.

Members inclined to favour the Society with papers during this session will please communicate with the Hon. Sec., M. Finlayson, L.D.S.Ed., 23, Castle Street, Edinburgh.

Dental News.

ROYAL COLLEGE OF SURGEONS, ENGLAND.

THE following gentlemen, having undergone the necessary examinations at meetings of the Board on the 22nd, 23rd and 24th of September, were admitted Licentiates in Dental Surgery, viz.:—

Messrs. H. S. Burton, Wellington, Somerset; R. St. J. Dorey, Brighton; E. Latchmore, Tunbridge Wells; J. McStay, King's Street, Belfast; J. Petherbridge, Buckfastleigh, Devon; H. L. Pillin, Conduit Street, W.; and G. Thomson, Melbourne, Australia; students of the Middlesex Hospital; A. King, Burton Terrace, York; student of Charing Cross Hospital; and A. E. C. Woodhouse, M.R.C.S., Hanover Square, of Guy's Hospital.

Three candidates were referred.

The following were the questions submitted to the candidates at the above examinations, viz.:—

ANATOMY AND PHYSIOLOGY.

1. Describe the antrum of Highmore in the human skeleton; give also its arrangement in the living subject.

2. What is the composition of saliva? State how the secretions of the several glands differ in composition.

SURGERY AND PATHOLOGY.

1. Describe the different stages of bone caries, and give the treatment.

2. Describe the effects of mercurial salivation upon the mouth-structures, and contrast them with those of phosphorus.

DENTAL ANATOMY AND PHYSIOLOGY.

1. Describe and compare the dentitions of (i.) hyæna, (ii.) dog, (iii.) bear. State in general terms the characters which distinguish the dentitions of the aquatic carnivora.

2. Give an account of prognathism; enumerate the bones chiefly concerned in its production.

3. Describe the process of absorption of the temporary teeth. What are the conditions which further or retard it?

DENTAL SURGERY AND PATHOLOGY.

1. What are the histological changes which occur in inflammation of the pulp? Describe its various terminations.

2. Under what circumstances should osteoplastics be employed for fillings in incisor teeth? What, in general terms, is the chemical composition of these materials?

3. Give the chief forms of perforate and cleft palates. Discuss the relative advantages of operative and mechanical treatment.

(The candidates were required to answer at least one of the two questions, both on Anatomy and Physiology, and on Surgery and Pathology; and also two out of the three questions, both on Dental Anatomy and Physiology, and on Dental Surgery and Pathology.)

ROYAL COLLEGE OF SURGEONS IN IRELAND.

At a meeting of the council of the College, held on the 18th ult., the following were elected Examiners in Dental Surgery for the ensuing year, viz.:—

Edward A. Stoker; Edward S. O'Grady; Henry Gray Croly; Henry G. Sherlock; J. Daniel Corbett and Arthur W. M. Baker.

ROYAL COLLEGE OF SURGEONS, EDINBURGH.

DURING the October Sitzings of the Examiners, Ernest Frank Cox (Gloucestershire), passed his first professional L.D.S. examination, and Edward Percy May, M.R.C.S.,

(London), John Wood, L.D.S.I., (Dumfries), and Ernest Frank Cox (Gloucestershire), passed their final examinations, and were admitted L.D.S.

ROYAL COLLEGE OF SURGEONS' MUSEUM.

We are requested by Mr. Alfred Coleman to acknowledge the receipt of contributions to the above from Mr. Charles A. Clark, of Forest Hill, S.E., and Mr. W. S. Burrows, of New Road, E.

MEETING OF THE MIDLAND BRANCH OF THE BRITISH DENTAL ASSOCIATION.

THE Midland Branch of the British Dental Association will hold a Special Meeting of members and friends in Birmingham, on Saturday, December 8th, 1883, at 12.30 p.m., when several papers of interest will be read, and discussion thereon invited. There will also be special clinics during the afternoon. The meeting will be held under the presidency of Rolfe King, L.D.S. Further particulars will be duly announced.

R. DIXON MILLAR,
Secretary to the Local Branch.

APPOINTMENTS.

Mr. HENRY C. CARTER, L.D.S.I., has been appointed Assistant House Surgeon to the above hospital., Oct. 6th, 1883.

Mr. T. H. COLEMAN, of Wrexham, has been appointed Surgeon Dentist to the Wrexham Union.

VACANCY.

DENTAL HOSPITAL, LEICESTER SQUARE.—Lecturer on Anatomy and Physiology to the above Institution. Applications on or before Nov. 12th, 1883, to the Dean, J. Francis Ken Underwood.

Correspondence.

[We do not hold ourselves responsible for the opinions expressed by our
Correspondents.]

THE DENTAL HOSPITAL OF DUBLIN.

To the Editor of the "British Journal of Dental Science."

SIR,—I have some diffidence in asking space in your columns again for this subject.

I should not do so but for an unwarrantable use that has been made of my name in a letter of Mr. F. St. B. Taylor, L.D.S.I., Hon. Sec. Metropolitan Dental Hospital, in your last issue.

I hardly thought it was capable for any member of the profession to write as he has, contrary to facts that he must have well known.

It is generally assumed that when a man puts himself in print he has some logical sequence for the conclusion he means to arrive at.

Mr. Taylor, it appears to me, is wanting in this vital quality, or, that he deliberately tries to throw dust in the eyes of intelligent readers. He states, "when Mr. O'Duffy can show a satisfactory balance sheet up to the time when he resigned, it will be quite time enough for the present staff to show theirs!" and, in the next breath, says Mr. Taylor, "It was considered advisable to find some means of severing his (my) connection with it." If this is not a piece of sophistry, gross and absurd, to an ordinary mind, I cannot imagine what is.

Mr. Taylor's innuendo I shall put into a line. It is in effect that because I did not produce a balance sheet (as he presumes to assert) that therefore the staff of this hospital of which he subscribes himself the Honorary Secretary *should not do so*. And this he says deliberately in his letter to you, and in face of the well defined provisions of the Dentists' Act. Even assuming that I failed in producing a balance sheet, I should like to know is that any reason why Mr. Taylor and the other members of his staff should not have done so for the perpetuation of the hospital on the basis on which it was founded?

But the truth is they departed from the legitimate lines laid down by me at the foundation of the hospital, and your readers, professional or otherwise, will recognise and admit the fact, notwithstanding Mr. Taylor's insinuations to the contrary, when I state that the entire consulting staff as well as several members of the Committee have recently withdrawn from the institution.

So long ago as the 29th Nov., 1881, I wrote to the Hon. Sec. (H. G. Sherlock, F.R.C.S.I.), in reference to several previous official communications, and in that letter I concluded thus: "For the fourth time I beg to inform you I require a specific answer to the said communications, and I again call upon you as the Secretary of the Institution to summon a meeting in order *that the accounts may be audited* and that matters at issue in law may be considered."

With this quotation I quit Mr. F. St. B. Taylor for the present.

Yours, &c.,

JOHN O'DUFFY, L.D.S., R.C.S.I.

*Member of the Representative Board, British
Dental Association.*

58, Rutland Square, W.

Dublin, Oct. 23rd, 1883.

To the Editor of the "British Journal of Dental Science."

SIR,—Mr. O'Duffy, in his letter on the above subject in your issue on Aug. 15th, says, "The letter of your correspondent 'Dental Reform' did not astonish me." I cannot say as much for the letter of Mr. St. B. Taylor, L.D.S.I., Hon. Sec. of the Metropolitan Dental Hospital, in your last issue. The boldness of that gentleman's statement surprises me much, more especially as he is the remnant of what constitutes the staff of this hospital.

He sends to your Journal a letter that in its first sentence contains a gross misstatement; namely, that "The English contributors to the Dental Hospital of Dublin entrusted their money to Mr. O'Duffy."

I for one (and I can name others) sent my subscription to Mr. J. H. Longford, its Hon. Treasurer.

Mr. Taylor further lays down a doctrine that no honest man could, in my belief, subscribe to; and that is, that

because he assumes that he and those who are still associated with him have not produced a balance-sheet for the conduct of the hospital during the time it has been in their hands, they do not do so, forsooth, as they claim that Mr. O'Duffy did not!

I think this is a very lame and absurd excuse on the part of Mr. Taylor and those who are still associated with him. All I asked for in my communication to you was, "*How it is that no monthly or quarterly reports are published similar to those of kindred establishments in London and the provinces.*"

Now, perhaps, Mr. Taylor, Mr. Longford, or Mr. Murry, whom I believe form the remnant of the staff, will supply you with some information on this point that will satisfy the profession and

Yours, &c.,

DENTAL REFORM.

Oct 23rd, 1883.

To Correspondents.

ANSWER TO CORRESPONDENT.

Jos. A. Clarke, Glasgow.—Your letter hangs upon the question of temperature changes caused by alcohol. This question is at present absolutely open, as experiments carefully performed give contradictory conclusions. See experiments by Parkes, Ringer, Hammond, etc.

Communications have been received from Messrs. J. O'Duffy (Dublin), H. Evans (Tenby), J. Williams (Walsall), J. Wood (Dumfries), M. Finlayson (Edinburgh), Secretary, Royal College of Surgeons of Edinburgh, H. C. Carter (London), W. H. Waite (Liverpool), James T. Hoare (London), Dental Reform, T. H. Coleman (Wrexham), S. L. Rymer (Croydon), T. Dixon Miller (Birmingham), Dr. Buxton (London), J. P. Thompson (Belgium), A. Coleman (Streatham).

CORRECTION.—Erratum.—Last No., page 962, line 2, read "soft" palate for "left" palate.

BOOKS AND PAPERS RECEIVED.

"British Medical Journal," "Lancet," "Gazette des Hopitaux," "The Edinburgh Clinical and Pathological Journal," "American Journal of Dental Science," "Ohio State Journal," "Atlantic Journal of Medicine," "Shrewsbury Chronicle," "Wakefield and West Riding Herald," "Independent Practitioner," "Southern Dental Journal," "New England Journal of Dentistry," "L'Odontologie," "Pharmaceutical Journal," "Repertorio Dental," "Correspondenz-Blatt für Zahnärzte," "Progres Dentaire," "Die Zahntechnische Reform," "Et Progreso Dental," "Monatsschrift des Vereins Deutscher Zahnkünstler," "Journal di Correspondenze per Dentists," "Chemist and Druggist."

British Journal of Dental Science.

No. 380. LONDON, NOVEMBER 15, 1883. VOL. XXVI.

ANTISEPTIC DENTISTRY.

By DUDLEY W. BUXTON, M.B., B.S.Lond., &c.

(Concluded from p. 1000.)

In no sense is the proverb, "prevention is better than cure," more relevant than when used about dental caries. There are many symptoms which the skilled physician associates with digestive derangement, itself perhaps only a symptom of a far wider and constitutional state. These symptoms alike show that the teeth are in danger. And we believe that after the recognition of these symptoms to conduct their treatment upon rational methods we must include local and antiseptic applications.

It has been shown that tooth-rotting outside the mouth occurs in acid solutions, when such solutions are exposed to bacterial invasion, while it is stated that mere acid solutions are inoperative. Surely we have plainly our lesson taught us,—neutralise the acid, reduce the septic influences to a minimum. We have indicated above in what order we can arrange our remedies; it remains to point out how our knowledge must be applied. Undoubtedly the great majority of practitioners fear to employ really effective mouth washes, lest a portion should be swallowed and the antiseptic become a poison. But the danger is more in an inexperienced imagination than in reality; careful instructions on the one side and common intelligence upon the other, will effectually prevent so untoward a result.

Breath fœtor, often a most troublesome complaint, comes naturally under the hands of the Dentist. In this place we cannot dwell upon the question of diagnosis, important though it be, we may, however, indicate that

such a symptom is common alike to derangements of the alimentary tract quite below the buccal cavity, and to various morbid states of the mouth, nose and pharynx. To treat this symptom by rule of thumb before we have localised it, is as unscientific as it is unsuccessful. We are now concerned with breath fœtor as a symptom of gingival and tooth lesions, but let us say again, no matter how skilled we be in concocting an antiseptic treatment, we must fail in practice until we can show definitely that we have localised the lesion. The converse mistake is also frequently made—men find teeth, not perhaps above all suspicion, and are only too ready to refer the trouble to their presence—the teeth are avulsed, and the patient, poorer in teeth, is no wealthier in comfort, a gouty or other dyspeptic dyscrasia was overlooked, and a wrong mode of treatment was accordingly employed.

When we have successfully localised our lesion, we employ our treatment, and it is beyond all question, we believe, that such treatment should have for its keystone, the idea of antisepticism. Mere irrigation, and preferably by warm water, as this excites salivary secretion, will, in mild cases, prove efficacious if resort to it be had early, and it be practiced sufficiently often. Failing so simple a remedy, we may employ one of the substances indicated above, taking care to follow its use by thorough rinsing with plain water. But it often happens that the gums are at fault, and tend to retract, leaving the teeth exposed, and removing both support and protection. Simply painting such gums systematically with pure glycerine or holding another antiseptic in watery solution, will soon mend matters.

Just as abscesses and ulcers are, when occurring on the skin surface of the body, treated by incision—antiseptically and by efficient drainage and appropriate antiseptic applications—so should all gingivitis and abscesses about the fangs of teeth be treated. But few attempts are usually made to treat so-called gum-boils in any way approaching scientific precision, and as often as not to a linseed meal poultice applied upon the cheek, is relegated the duty of effecting a cure. Volkmann's sharp spoon is perhaps less a novelty in the domain of the Dentists than in that of pure surgery. To scrape out cavities in teeth is undoubtedly rational; but how

many are there who, in filling such a cavity, either take the trouble to inject it, or to employ a stopping which will fulfil its manifold duties and yet be an antiseptic.

Then again when Dentists have the opportunity of seeing early cases of dental caries—caries arising undoubtedly from anhygienic condition of the mouth, or intestinal canal, how important it is that the patients should receive such advice and prescription which will ensure their being spared the agony of an almost constant toothache, as one tooth after another becomes infected, and the infection passes on to the stage when the tooth is pronounced of no use save for avulsion.

We have striven to promote a plea for a more prolonged, and we may add intelligent trial of the methods of antiseptic surgery to the mouth diseases, usually treated by Dental Surgeons. That we have but cursorily glanced at our subject, we are fully aware; to attempt a methodical exposition of the question under discussion would occupy more space than we can command, while it would embark us upon rather a treatise than a simple essay, and involve issues, researches, methods and pathological references, quite outside the scope of the present paper.

To the inceptive mind, the subject matter touched upon cannot fail, we think, to initiate trains of thought, which must culminate in more sound knowledge and more advanced methods of action. Be it always remembered, that to lose our permanent—too often a fearful misnomer—teeth is not a normal but a pathological condition; and we believe it is a condition capable if not of being counteracted, at least of being vastly ameliorated, and to effect this end rational mouth antiseptics will go far and accomplish much.

FLUXION DENTAIRE.

By Dr. MAGITOT, of Paris.

(Continued from p. 973.)

After the occurrence of one or more simple inflammatory *fluxions*, or even of several oedematous swellings, it often happens that the deep tissues of the cheek, which lie in contact with bone, become the seat of a very marked indura-

tion, which sometimes limits itself to the form of knots of the size of an olive, while at others it appears as a plate of variable thickness and extent.

The composition of these indurated masses varies under different circumstances, especially is it influenced by their age. Thus while they may be composed of a simple mass of fibrinous clot resulting from exudation of plastic lymph, they may at other times become the seat of development of embryonic cells which transform them into true connective tissue. And further, they may become cartilaginous or osseous, a kind of osteophyte being produced as a result of an osteitis occurring in the maxilla.

This chronic form of *fluxion* is always an indication of the persistence of the original cause of the trouble; there is a sort of inflammatory focus giving rise to a state of chronic congestion, and affording a centre for the outbreak of future attacks of common *fluxion*. With this chronic state, the anatomical seat of which is usually the immediate neighbourhood of the bone, we often find coupled a permanent contracture of the muscles. The muscles may for a time simply present the usual aspect of the inflammatory state, but if the condition be prolonged, the very elements of the muscle retract and become the seat of actual structural shortening, the fibres undergoing atrophy and even fatty degeneration, and thus this phenomenon of muscular contraction assumes a character of great gravity, since it is irremediable without surgical procedure (such as those of Esmarch and Rizzoli).

These then are the details of the chronic form of *fluxion*, which group themselves along with certain severe lesions of the alveolar arches, such as, for example, necrosis of the lower jaw following phosphorus inhalations, certain tumours arising from the periosteum with some cysts or odontomata, complicated by the accidents arising from their neighbourhood.

SYMPTOMALOGY.—TERMINATIONS.

We have already enlarged sufficiently upon the process of *fluxion* and upon the objective phenomena which it presents, it now remains for us to point out the symptoms to which it usually gives rise.

In the case of simple œdematous *fluxion*, there is at first

almost complete abeyance of symptom; at length there is slight pain on pressure, and often only over an area corresponding closely to the centre of inflammatory action. The swelling appears suddenly and without any warning which could herald its approach. Sometimes even the initial alteration in the alveolus is quite unknown, so that the *fluxion* really gives the first outward manifestations of its own existence.

The phlegmonous form appears with more complex phenomena. Usually the alveolar border has been the seat of some trouble, such as an alveolar periostitis with its usual train of symptoms. In every case there is some local cause found as an antecedent. In these varieties the *fluxion* presents a definite train of symptoms. Pressure over the swelling gives great pain, there is throbbing coupled with sensations of heat and tension; sometimes indeed general symptoms appear, such as slight shivering fits, feeling of general illness, and headache—in fact, the usual symptoms which accompany the formation of pus. These symptoms are often but limited, and cease as soon as pus has formed. They thus are present during the development of pus, but leave even before the swelling has disappeared, and give place to an almost complete immunity from discomfort. They coincide closely with the period of onset, and disappear during the stage of decrudescence. In fine, the whole group of symptoms are entirely subordinated to the local condition.

It is in the severe form in the diffuse phlegmon of the face that the symptoms assume a more severe character, there is an initial rigour often attesting by its severity the degree of virulence that the attack will ultimately assume. The pain becomes acute and lancinating; to this succeed a series of symptoms, in part local, in part general, but which it seems hardly profitable that we should trace; since they do not offer any variation from those which are found habitually accompanying diffuse phlegmon elsewhere. We shall content ourselves with saying, that the extreme sensitiveness of the facial region and the sudden involvement of the various inflamed tissues, either by the side of the alveolar border, or in the aponeurotic planes, gives rise to particularly acute suffering.

Muscular contracture however does not possess symptom;

peculiar to it. Sometimes even it may supervene in a case of simple phlegmonous *fluxion*, and is entirely unnoticed even by the sufferers themselves, unless when they move their jaws. The pterygoid muscles may become affected quite suddenly without any premonitory symptoms.

The indolent condition of this contraction is very marked in the chronic form. It is the same also with regard to the indurated nodules spoken of above, and in this insidious condition may be said to be the danger of a return of acute attacks.

These nodules, the characters of which we have studied above, may thus persist and so become the seat of a renewed attack, or existing for an indefinite time in a state of absolute quiescence, may at any time complicate other accidents which may attack the jaws, and which may be as chronic in character. Thus we have seen for example, a case of the production of a fibrous cord extending towards the exterior and forming a sort of fistulous canal to a small cold abscess.

It is in cases of this kind that we advise and indeed practice the division of the cord on the side of the mouth, and by re-establishing communication with the mouth, attempt the closure of the cutaneous aperture.

(To be continued.)

CLEFT-PALATE, HARE-LIP, STAPHYLORAPHY.

Under the care of CHRISTOPHER HEATH, F.R.C.S.,

HOLME PROFESSOR OF CLINICAL SURGERY AND SURGEON TO THE UNIVERSITY COLLEGE HOSPITAL.

(Concluded from p. 1003.)

CASE II.

For notes of this we are indebted to Victor Horsley, B.S., F.R.C.S., Registrar.

H. S. C., Oct. 6th, admitted under Mr. Heath, July, 1883.

Patient was a healthy, well-formed boy. The soft palate is cleft throughout, the uvula is present, but divided, its two halves approximating to within half-an-inch, when the child cries, "Ah!"

In the middle line of posterior wall of pharynx is a small

pit, three mm. long, which forms a vertical slit. The probe passed through this strikes the basilar bone, at a distance of two mm.

July 25th. Patient chloroformed. The edges of the soft palate were freshened, and it was separated on both sides from the hard palate. The sides were then drawn together with horse-hair stitches. The progress was very rapid, but a slight aperture persisted at the junction of hard and soft palates. The stitches were removed Aug. 8th, that is a fortnight after operation.

Remarks.

In both cases the possibility of a minute aperture remaining patent was entertained. These failures of union are usually at the spot named above, and should the non-union persist, it is often enough advisable to freshen the edges of the wounded surfaces by means of Paquelin's Benzine cautery.

In both cases, a marked improvement in the patient's speech took place.

We have yet to consider a point of the first importance, viz, the after-treatment of cases of cleft-palate. Perhaps no cause has given rise to more ill-success in operating than a careless or ignorant after-treatment.

Heath, writing upon this subject, says: "It is essential that plenty of liquid food be given during the first day or two, and be followed up by semi-solid food, so that the patient's strength may be well supported, and the process of healing accelerated. The idea that any effort at swallowing, even saliva, must necessarily tear open the wound was shown by Sir William Fergusson to be fallacious; and the practice of starving the patient, first decried by Sir Philip Crampton, is now universally abandoned."

Absolute physiological rest must be given to the parts, so that all talking, unnecessary mastication, &c., must be interdicted. It may be said that this is an argument against operations undertaken during infancy; but such is not the case, as, be it observed, infants do not cry or scream when left to themselves if the process of crying causes them pain. And to cry with stitches in the palate is painful.

All care must be taken to avoid exposure, as a catarrh is obviously a serious matter if supervening in these cases.

It will be noticed that the stitches were in both cases left in far longer than used to be considered right, and the operator gives his reasons as follows: "The time for removing the stitches after an operation for cleft palate has been greatly modified of late years, and it has come to be thought by the most experienced operators that the longer they are left the better. In most cases, silk or horsehair sutures should be removed in from ten days to a fortnight: but fine wire sutures may be left for weeks or even months, so long as they do not scratch the tongue."

As to the choice of which method of operating we must refer our readers to Mr. Heath's valuable papers, to which we have referred above. There can be little doubt that some latitude, both as to intention and to execution, must be allowed, since the cases require treating upon their own merits; and in no class of operative procedure does previous experience tell more than in the performance of operations for closing congenital clefts of the palate.

In the choice of an anæsthetic a few words may be said. We have to bear in mind two important considerations: (i.) the patient's welfare, and (ii.) the convenience of the operator. In no class of operations, except those upon the eye, is absolute quietness more essential. A surgeon, however skilled, must have his patience sorely taxed, and his attempts at planting his sutures more or less frustrated by a restless patient; a patient who is but partially under the influence of the anæsthetic, and who requires the frequent and therefore troublesome ministrations of the presiding anæsthetist. Chloroform is undeniable the most useful agent to employ, but some little trouble must be taken in its administration, and the knowledge of the requirements of the surgeon will alone enable the administrator to perform his duties satisfactorily.

The child should be absolutely free from muscular rigidity before the operator is allowed to commence, and care must be taken that a natural sleep induced by a few inhalations of the vapour is not mistaken for narcosis.

If the muscular relaxation is complete, the operation will in most cases be able to be nearly finished before any resort be had again to the chloroformed lint.

The raising of the head and wide-opened mouth need not

be in any way dangerous if the tongue be kept well forward, by keeping the hyoid bone raised, which can be easily accomplished with the fingers of the supporting hands.

The bleeding will occur chiefly in the later stages of the operation when the sensitiveness of the larynx is returning, and a few small soft sponges firmly fixed on long handles will prevent any trouble. To use these sponges effectually they should be held by an assistant standing to one side, he will be able to keep the back of the pharynx free from blood or pus, on any bleeding point, should the occasion arise.

CASE III.—CONGENITAL EPULIS.

P. T. was a healthy infant of three months; he attended as an out-patient.

Present State. On forcibly opening the jaws a growth was seen upon the muco-periosteum of the upper jaw to right of mesial line. This occupied the position of the future canine and bicuspid of that side. It was pedunculated and of the size of a French-bean seed cut across. This growth had been present from birth.

Operation Oct. 10th, consisted in simply snipping off the epulis and checking hæmorrhage with Paquelin's cautery.

Remarks.

The interest of this case centres in the extreme rarity of congenital epulis. Microscopic examination showed the structure to be purely fibrous. In these cases one has to seek for some intra-uterine disease as the starting-point. In diagnosis we have to distinguish this condition from simple hypertrophy of gums; and in undertaking such a diagnosis we must remember it is one rather of degree than kind. Erichsen says: "The fibrous variety (of epulis) appears to be a circumscribed and rapidly-growing hypertrophy of the gum."

The usual way of accounting for epulides is by supposing that the presence of decayed teeth or stumps sets up an irritative hyperplasia, an explanation which clearly fails in the case before us.

There was not the slightest cause to suspect any irritation of the gums, at least recent, as those structures were absolutely healthy save for this small epulis.

It is noticeable that operations about the gums of young children are often feared on account of the bleeding, which it is commonly thought invariably results. In this case, what bleeding there was entirely stopped when Paquelin's cautery was lightly rubbed over the gum. Indeed, with this instrument at hand, there is seldom any danger in such cases, even were the popular idea of the hæmorrhagic tendencies of the gums of infants based upon more solid foundation than it seems to be, if we are to believe the most recent authorities.

SOME POINTS IN ORAL SURGERY OF INTEREST TO THE GENERAL PRACTITIONER.

BY GEORGE L. PARMELE, M.D., D.M.D.

(Concluded from p. 1011.)

I have always believed that Dentistry ought never to have been established as a separate profession, but that any one desiring to practice in any department of medicine should be required to follow a regular medical education, and then to perfect himself in the desired specialty.

I think that a few lectures on Dental pathology, introduced into our medical courses, would be of great value to the general practitioner. I desire to ask the co-operation of the medical profession in the preservation of the temporary and deciduous teeth. You come more in contact with the little ones, and have better chances of observing their mouths, and of giving advice to their parents than the Dentist.

The deciduous teeth for the most part receive attention only when the sufferings of the child render palliative treatment necessary. Perhaps you are not fully alive to the consequences, direct or indirect, of the premature loss of these organs upon the future health and comfort of the child.

On these teeth to a great degree depends, not only the regularity and usefulness of the permanent set, but the perfection of the whole physical organization. At no other time in life are sound, serviceable teeth more necessary as aids to digestion than during these years of growth and development. It is therefore a sad mistake when temporary teeth are permitted to be prematurely extracted. Serious may be the con-

sequences when days and nights of odontalgic pain are suffered to elapse without mitigation. In fact, the health and welfare of the individual may be seriously impaired by a neglect of the treatment which these teeth demand in the majority of cases. Parents have not been educated as to their value, and a great many Dentists practically ignore the matter because of the difficulty and tediousness of operations on the teeth of young children, and because these cases do not directly pay pecuniarily.

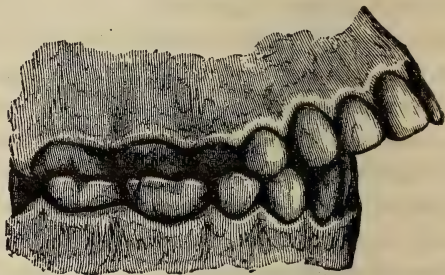
I would not have you construe what I have said concerning premature extraction of these teeth in meaning that they should never be extracted, for oftentimes the removal of some of them is an absolute necessity, as for example, an alveolar abscess connected with a deciduous tooth not unfrequently results in necrosis of the surrounding bone, involving oftentimes the loss of the germs of several permanent teeth. The following case illustrates this point:

Johnnie F., of Irish parentage, and scrofulous diathesis, about five years of age, was brought to me by his mother, who desired the extraction of the right inferior second molar to relieve pain, which he referred to that tooth. Examination showed the surrounding parts congested and highly offensive, but the tooth complained of was so slightly attacked by caries as to show at a glance that it was not the cause of the trouble. Traction upon it however, showed it, and a portion of the adjoining bone, quite loose and free from the maxilla. After making a slight incision I was able to gently lift out the exfoliated portion (which I pass around for your inspection). It will be observed that the germs of the permanent bicuspid are in the sequestrum, but on examination of the boy's mouth at the present time (it being now about seven years since I first saw him), shows the permanent canine also missing, the germ of which occupied the space where the most acute inflammation seems to have been. Owing to ignorance of the mother the history of the case is rather meagre, she not being aware of any trouble until a day or two before consulting me. I am inclined to think, however, that the trouble resulted from a blow which the boy said he received about a year before. The only after-treatment required was thorough cleansing with carbolyzed water—the parts healing generally.

The whole of the time allotted to me for this essay could to advantage be used on this question alone, but I will tax your patience only long enough to again ask that you use your influence in trying to impress upon parents the necessity of having these teeth carefully and frequently examined by a competent practitioner, for more can be done to *avoid* impairment of the teeth before the age of twelve than at any other time.

While speaking of children, I will simply call your attention to a deformity of the oral and nasal cavities and the adjacent bones, which often seriously impairs mastication and speech, and occasions difficulty in nasal breathing, with its attendant ills. In this deformity, which is produced by the habit in the infant of thumb-sucking,* there is a forward and upward projection of

the superior maxilla, accompanied by a fan-like projection of the teeth and upper lips. The bones of the floor of the nares are elongated, narrowing the nasal cavity, and generally there is a lateral deviation of the bridge and septum of



the nose which causes stenosis, from the thickening of the tissues. In the lower jaw a reversed deformity often exists which deranges the proper articulation of the teeth, interfering with mastication, and consequently impairs digestion. The practice of lip, finger, or tongue-sucking may be reckoned under this head, and can cause considerable deformity at an age when the parts are so easily moved and moulded, and whenever any of these pernicious habits have been formed in children, no pains should be spared to break them up. This habit, apparently so innocent, if often encouraged by those ignorant of the consequences as the peace and quiet given to parents while irritable infants are so engaged is considered especially desirable.

Although a habit hard to correct, even in quite young chil-

* Through the kindness of Norman W. Kingsley, M.D.S., D.D.S., I am allowed the use of this figure (from his work on "Oral Deformities"), which shows a deformity resulting from thumb-sucking.

dren, and one which waxes stronger with increased years, to break it up is easier than to remedy the resulting deformity. A night-dress without sleeves, fitting tightly about the neck inside of which the arms can move at will, is one good mode of treatment. A very interesting article on this subject will be found in the "Boston Medical and Surgical Journal," 1878, by T. H. Chandler, D.M.D.

Physicians and Dentists have long observed that during pregnancy the teeth of females are particularly prone to decay. While I have never met with any theory as to the cause of such increase, I am inclined to the opinion that to the abnormal condition of the female pelvic organs, acting through the digestion, together with a vitiated condition of the oral fluids at this time, is due this result.

The same is true, to a great extent, of females suffering from uterine diseases. When such a condition exists, whatever the causes, the treatment should be of a temporary nature, so as to lessen the strain on the nervous system of the patient, and because so-called permanent operations will, while the same predisposing causes exist to produce caries, be found soon to fail. Gutta percha or oxyphosphate of zinc fillings will be found in such cases to outlast any metallic stoppings.

Having often been consulted by medical men as to the advisability of extracting teeth from the mouths of pregnant women, a few words here, on this topic, may not be out of place. While the extraction of a tooth is an operation of common occurrence, it should not be considered as trifling, for it produces invariably a sudden nervous impression—*shock*.

There is a rupture of from one to three square inches of living tissue, containing blood-vessels, and from one to four nerves, while often there is more or less extensive fracture of the bony process and profuse hemorrhage; and in the case of a pregnant woman, all these things should be borne in mind, together with her previous history and condition.

That which may be endured with impunity by the nervous system at one time, may at another be attended by serious injury and prostration. The condition of the tooth also should be taken into consideration, as to its amenability to temporary treatment for allaying pain incident to it, also to the amount of force required in its extraction, and the consequent shock.

Where a choice has to be made between allowing the tooth to remain, involving odontalgia, severe neuralgia, antral or alveolar abscess (conditions compromising the general health and comfort of the patient), and the removal of the offender, the latter course I should think the proper one to follow, but this contingency can usually be avoided, and does not often arise. It should be a choice between two evils, and especial care should be used to avoid, as far as possible, all nervous impressions. When extraction must be resorted to, I should advise the use of an anæsthetic, preferably nitrous oxide, there being less danger attending its administration, and because its effects so quickly pass away; and furthermore the operation had better be performed at the home of the patient, especially if she be in delicate health, so as to avoid the nervous irritability which is often awakened by seeing the paraphernalia of the extracting room. I should consider it reprehensible to extract teeth at this time to prepare the mouth for an artificial denture, as the operation should only be performed during pregnancy as a last resort.

As the greater danger of miscarriage exists in the earlier months of pregnancy, temporary treatment, if possible, should then be resorted to, if only for a few weeks. Still, where the tooth is not *easily* amenable to treatment, I believe that the shock from extraction would be less likely to do harm than the exhaustion produced by long continued pain.

In ending, I can truly say that I feel honoured with my appointment as an essayist for this occasion, an honour which I desire to acknowledge.

ABSTRACT OF PAPER ON CONGENITAL DOUBLE LOWER JAW IN A GIRL, AGED 14.*

By Dr. WILLY MEYER.

THIS malformation was first described by Dr. Magitot who divided it into two classes: 1. *Polygnathy*, in which there is an actual doubling of the lower jaw; 2. *Epignathy*, in

* Published *in extenso* in third fasciculus of 29th volume of "Archiv für Klinische Chirurgie."

which the second jaw is only a portion of a second individual, a so-called parasite.

In neither of Magitot's cases, however, was there next to the perfectly well-formed jaw a second dental arch supplied with teeth, together with the entire absence of any other abnormality; which would have proved conclusively the non-existence of a parasite.

This form of malformation was next described in 1824 by Etienne Geoffroy St. Hilaire, who gave his case the name of *hypognathe monocéphale*. Bartels, of Berlin, recorded a similar case in his inaugural dissertation in 1830. Six years later, in 1836, Isodore Geoffroy St. Hilaire gave an account of a similar malformation under the name of *monstre double polygnathien*. He admitted three classes of this form of monstrosity—*epignathe*, *hypognathe*, and *augnathe* (double, from the Greek word *αὐ*). In the last class the head is altogether reduced to the lower jaw. In the two other classes larger portions of the head remain.

In 1875 Magitot published another article on this subject, which he entitled "De la Polygnathie chez l'Homme." In it he mentions four cases as having occurred in man, and ten others in animals. Of the first four, two were recorded by Ahlfeld in the "Beiträge für Lehre von Zwillingen," who classes them both amongst the *epignathians*, that is, *fœtuses*, in whose mouths were found tumours containing portions of a second ovum. The two other cases were also included in the same class by the original observers.

We consider ourselves justified therefore in stating that the following case is the first genuine recorded instance of polygnathism in man.

Elizabeth B., aged 14, from Oberstockberg, is the first child of perfectly healthy parents. She has several brothers and sisters, none of whom show any malformation of any kind. At her birth it was noticed that she bore on the left and to the outside of the normal arch of the lower jaw, a swelling about the size of a walnut, which could be both easily felt and seen. The lower lip was very long and hung far below the chin. Eighteen weeks after birth, a wedge-shaped piece was excised from the lip to remove the deformity.

Dentition commenced at the 15th month only, by the cut-

ting of the lower incisors. All the milk teeth appeared and were shed in the usual order. The tumour meanwhile remained unaltered, though it was noticed that it increased slowly in size. In the course of the 7th year, at the time of the second dentition, a tooth made its appearance towards the front of the tumour; this was followed in the course of time by six others. The child was so much troubled by these teeth, that she came to the clinic in August, 1878, for the purpose of having the four external ones from the pseudo jaw, as well as the projecting upper canine removed. Privy Councillor Busch, who then saw the case, ordered a plaster cast to be taken of the deformity, which operation was very successfully achieved.

In July last, the patient returned, complaining of a cushion of the mucous membrane, between the two rows of teeth, which had then existed for the last four years. It had latterly become very much larger, and she was now obliged to masticate her food altogether on the right side, as the swelling commenced bleeding each time she made use of the left side. The child also stated, that in the room of the four teeth removed in 1878, two front ones had made their appearance, the external of which proved exceedingly troublesome.

On the 11th of July her present state was as follows:—

Patient, well developed girl. At the very first glance the eye is struck by a large circumscribed swelling, resembling the œdema caused by a parulis in the region of the lower back teeth on the left side. The tumour has its principal point of convexity towards the middle of the horizontal branch of the lower jaw, and merges gradually into the normal contours towards the front, back, and the inferior border, but it does not project beyond the lower edge of the jaw. On palpation, the swelling is found to be of bony hardness and quite painless. When the mouth is opened, a wonderful sight meets the eye. About eight millimetres to the outside of the arch of the lower jaw on the left side, in the interval between it and the cheek, is seen a swelling covered with mucous membrane, which reaches from the second incisor tooth in front, to nearly as far back as the angle of the jaw, and there disappears without any well marked line of demarcation. From this tumour project five teeth, forming an arch with a slight convexity forwards

and to the right. The last two of these, from their size and shape, appear to be molars, the next one a bicuspid, and the two front ones incisors. Of the latter, the external one more especially is directed very much forwards and outwards. All these teeth appear to belong to the second dentition. Every one of them is deeply imbedded in the mucous membrane, more especially the last, the crown of which alone is visible. All along the swelling, from before, backwards, and from three to five millim. from the row of teeth, and diverging from it at the back, runs a furrow one millim. deep, covered with mucous membrane. In this groove from four to five millim. to the outside, and behind the molar teeth, lies an opening into which a sound can be passed vertically downwards without meeting with any resistance, and without being felt through the skin. This canal is a non-secreting one. The mucous membrane from the tumour extends into that of the cheek. As might be expected, the cheek pouch on the left side is not so deep as that on the right. The tumour is immovably fixed by bony tissue to the left half of the lower jaw. The arch of the lower maxilla is not symmetrical, but the symphysis is in the middle line. The alveolar process on the right side is shorter and rather higher than on the left, the whole of that side of the jaw, in fact, being on a higher level than the other. Between the branches of the lower maxilla the floor of the mouth is quite normal on either side. The angle and lower border of the jaw can both be clearly felt. As far as it is possible to make out, the ascending ramus is quite normal. The mouth can be opened without any difficulty; the alveolar process of the proper jaw bears 12 well-formed teeth, the four incisors lie close together and are very irregularly disposed; to the right of these are the canine, two premolars, and two molars; on the left side the canine is missing (it is said never to have appeared), and the second molar has not yet been cut, there are thus two premolars and one molar.

Springing behind from the mucous membrane of the mouth and the cheek, and running forwards between the two rows of teeth on the left side to the middle of the lip, where it forms the frænum, is a fold of mucous membrane very much like a cock's comb. When the mouth is closed the teeth of the upper

jaw sink into this. The upper jaw is also asymmetrical, the left half being shorter and less arched than the right. It contains thirteen teeth: four incisors, two bicuspid and two molars on either side, and the right canine. The left canine has been extracted. The child has thus the proper number of teeth for her age. The hard palate is narrower on the right than on the left; on the whole somewhat oblique. The raphe follows a sagittal direction, and at the back, opposite the first molar on the left side, it bends forwards, and to the right to end between the two central incisors.

(To be continued.)

CIVILIZATION NOT THE CAUSE OF TOOTH DECAY.

By JOHN J. R. PATRICK, D.D.S., Belleville, Illinois.

(Continued from p. 1017.)

BOSJESMANS.—“The African bushmen, who have but few or no cattle, live upon what they can get. Hunger compels them to eat everything, roots, bulbs, the core of aloes, gums, berries, the larvæ of ants, lizards, locusts, grasshoppers; all are devoured by these poor wanderers of the desert. Nothing comes amiss to them.”

HOTTENTOTS.—“The food of the Hottentots is the flesh and entrails of cattle; they boil them in blood if they have any, to which they sometimes add milk, and this they look upon as a glorious dish. They have no set times for meals, they eat all sorts of fruits and roots.”—*Kolben's “State of the Cape of Good Hope.”*

EUROPEANS.—What has been said of the dietaries of the many peoples who inhabit the earth may be truly affirmed of the Europeans; they use everything and anything that will support life. The dead carcasses of animals are raked from the cesspools and gutters of their cities, the soft parts are submitted to a chemical process by which the fat is extracted, and eventually takes its place by the side of butter in the European pantry. Gelatine is extracted from the bones and is used in the manufacture of preserves, and the residuum of the animals goes to manure the ground. All parts of animals

are eaten in some form or other. Snails, frogs and the flesh of horses are esteemed great luxuries by the *bons vivants* in some parts of Europe. The brains, blood and viscera are eaten as well as the flesh. They use milk of ruminants in large quantities, and make many kinds of cheese from the curd, pressed into many forms, which keep for a long time. Many of these people eat, from preference, the old cheese which is far advanced in decomposition and full of the larvæ of insects, and esteem it a luxury. Others roll the curd into balls and expose it to the hot sun until it is partially decomposed, and other tribes form it into small bricks and bury it in manure till it ferments and commences to decay, as the Indian tribes of the interior of Oregon treat fish, and the more it smells, and the stronger it tastes, the greater delicacy they consider it. They make and use large quantities of intoxicating drinks, and are dotingly fond of tobacco, which they not only smoke like the Indians and Turks, but chew it incessantly, and draw it up their nostrils in fine powder. They have great abundance of vegetables, and cultivate all manner of cereal grains, wheat being the principal; fruits and roots they have of great variety, and that which they have not themselves they bring from great distances by the ingenious use of fire and water, which, producing steam, has put the products of the Orient into the markets of the Occident. One of their greatest achievements by the use of steam is their power of moving from place to place, and it is one of the most important, for it not only brings remote regions of the earth into proximity, but it actually in a sense, bridges over the great gulfs of time.

Thus it is seen that instances are to be found where life is sustained upon a wholly vegetable and a wholly animal, and a mixed diet; and that there is a great diversity as regards the kinds of food consumed by man in different parts of the earth. Now the elementary bodies, to be of service as food, must be in that state of combination known only in living organisms, for animal life cannot be sustained on inorganic matter; and the question of food and its preparation among all peoples appears to be no factor in the production of diseased teeth any more than other diseases, *for that which will support life must replenish the waste of all the organs of the*

body; and no article can, as food, satisfy the requirements of life that fails to comply with this condition.

If we examine the many animal organisms around us, we shall find that some are designed to subsist exclusively on animal food, others on vegetable, and others on a mixed diet. Now, as the digestive apparatus in general of these three classes of animals, is very different, and as the construction of the teeth is in conformity with the digestive apparatus, there is little difficulty in assigning man to his proper class. He has, from these considerations, been assigned by comparative anatomists to that class of animals designed in the general plan of nature to subsist on a mixed diet, and he is, in common with all other animals so constructed, capable of sustaining life on a wholly vegetable or wholly animal diet; and such is the case with all animals that live upon roots and fruits—their teeth and alimentary canals are similar. Now the question arises, who are the savages, and who are the civilized? Where are those people whom we have heard so much spoken of who live in a state of nature, and “whose teeth fairly glisten?” (To use the expression of the Milwaukee authority.) ’Tis a question of teeth and food; a question whether the teeth of the present period are in a worse condition than in former times.

Whether ’tis the effect of food we eat
That makes our teeth look like our meat.

I have shown that the food of the so-called savages who live on a mixed diet, differs but little from the so called civilized people. The Australian and the Chinese may consume a few more reptiles than the Europeans, and while their kitchens and larders may be somewhat different, the elements contained in *their* food which go to form the constituents of the body, cannot be considered essentially different from ours, any more than the air they breathe or the water they drink is different. In the little pamphlets issued from time to time designed as practical information for the people, we are told, on one page, of the perfect condition of the teeth of ancient skulls; and a few pages further on, strange and inconsistent as it may appear, we are again informed that Herodotus noticed and described various Dental operations in Egypt 450 B.C., and as though this were not enough to prove the antiquity of the profession and contradict the former statement, the “tombs of

Egypt, the temples of India, the sarcophagi of Greece, and the ruins of Pompeii are explored and made to give up their interesting specimens of primitive Dentistry, which together with teeth well filled with gold in the mouths of Egyptian mummies, are preserved and can be seen in museums." But unfortunately the authors fail to inform their readers where such skulls can be found or where such interesting specimens of primitive Dentistry can be seen. Now in order that this question of comparative tooth decay may be settled, I respectfully suggest that the collections of skulls contained in the following museums be examined, classified, and tabulated:

The collection of the Ethnological Department of the Smithsonian Institution, Washington, D.C.

The Museum of Anatomy and Surgery, Washington, D.C.

Museum of Natural History, Philadelphia, Pa. In this museum may be seen the large collection of human crania from every portion of the globe, collected and arranged by Dr. Samuel George Morton, author of *Crania Americana* and *Crania Egyptica*.

The Peabody Ethnological Museum, Cambridge, Mass.

The Abbot collection of Egyptian antiquities, Historical Rooms, New York City, and a small private collection at Belleville, Ill., containing nearly one hundred pre-historic skulls, taken from the mounds of the American Bottom, in which it is the exception to find a set of sound teeth. Now I hold it to be inexcusable for gentlemen to draw upon their imaginations for facts when there is so much material accessible.

Much of the early history of the decay of the human teeth and of the art of Dentistry I have in manuscript, but a few selections in this connection will not be out of place. Statement of Herodotus literally translated from his second book "Euterpe":—"The art of medicine is thus divided among them (the Egyptians); each physician applies himself to one disease only, and no more; all places abound in physicians; some physicians for the eyes, others for the head, *others for the teeth*, others for the parts about the belly, and others for internal disorders."*

* "Jam vero medicina apud eos hunc in modum est distributa, ut singulorum morborum sint medici, non plurium, itaque omnia referta sunt medicis. Alii enim sunt oculorum, alii capitis, alii dentium, alii alvi

This is the only statement made by Herodotus in regard to the human teeth, no mention whatever in regard to the manner in which the Egyptians treated diseases of any kind. The art of medicine was divided among the priesthood as in later times, and as their priesthood consecrated dogs, crocodiles, cats and onions, their art of medicine could not have been of a very scientific character, as we understand it. Further, they had not advanced beyond the use of bronze and picture writing in the time of Herodotus, and could, therefore, not have worked gold as we are capable of doing with our steel and iron.

In the Abbott collection there are many specimens of Egyptian jewellery made from native gold, turquoise, and other gems, rude in construction, so much so that the commonest dollar jewellery of the present period far surpasses it both in variety of design and workmanship. I find it recorded in the annals of Tacitus, that Germanicus, being informed of a revolt in the Roman army in the Belgic provinces, set out without delay to appease the tumult. "He was, however, no sooner within the lines than the camp resounded with groans and bitter lamentations. Some laid hold of the prince's hand as if going to kiss it, but inserting his fingers in their mouths, made him feel their boneless gums, complaining that they had lost their teeth in the Roman service."*

Thus it is seen that our "Belgic sires of old," as well as their descendants, were subject to the premature loss of their teeth.

(To be concluded.)

TWELFTH SESSION (1883) OF THE FRENCH
ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE,
HELD AT ROUEN.

MR. DUPLOUX, Chirurgien-en-Chef to the Military Hospital of Rochefort, proposed the following ingenious method for the more easy production of anæsthesia in cases of operation about the front of the jaws. A piece of thin sheet lead is cut in the shape of an ellipse, and of such a size that its

partium, alii morborum occultorum."—*Herodoti Halicarnassei Historia Euterpe.*

* "The Works of Cornelius Tacitus." Translated by Arthur Murphy Esq. Book I., chap. xxxiv.

edges may reach to the bottom of the g'ingivo-buccal culs-de-sacs. This kind of operculum is then moulded to the arches of the upper and lower jaws, and chloroform can now be administered through the nose without any possibility of blood getting into the air passages.

Mr. Duploux has used this method for the last five years in every operation for simple or complicated hare-lip, and in cases of removal of epithelioma followed by autoplasty. He was led to devise this operative expedient for a case of adenolipoma of the parotid, which he successfully removed through the mouth. The sheet of lead also serves as a good background for the delicate incisions required in many cases of hare-lip among children.

At this meeting also a very interesting paper was read by Dr. Redard, of Geneva, on his experience of the operation of transplantation of teeth. The paper is based on a series of 77 cases, which occurred within the last year in his own practice, and at the School of Dentistry of Geneva. In 75 of these the result was highly successful; in the two others the failure was due to the advanced stage of the disease in the alveolo dental periosteum.

Dr. Redard's method of performing the operation differs somewhat from that usually recommended. Thus the resection is made by means of a small saw, instead of with Liston's forceps; and contrary to the ordinary practice, the tooth is held in a wet cloth, repeatedly moistened with cold water, to prevent any chance of fermentation or decomposition in the periosteum.

Before reinserting the tooth, the alveolar cavity is thoroughly cleansed with a 20 per cent. solution of iodised iodine. No fistulous opening is made, as Dr. Redard has found it perfectly useless, and often very painful; but, on the day following the operation, the electric cautery is used over the alveolus in order to reduce the reactive phenomena.

The operation has also been performed on the roots of incisor teeth; with results far exceeding every expectation. It often happens that the crowns of front teeth, more especially the upper ones, are lost; and in these cases, instead of removing the roots altogether, when they are in a fistulous condition, Dr. Redard also recommends their replantation. The

operation is carried out in precisely the same way as in other cases: the root is removed, the diseased portion resected, the canal carefully cleaned out with a drill or a bur, and then marked with a one per cent. solution of carbolic acid. The root may now be stopped with gold or cement, or, if in a sufficiently healthy condition, a pivoted tooth may be screwed into the root cavity, and then fixed either by cement or a gold filling. This operation, which is performed outside the mouth, requires from two to four hours for its performance, and during the whole time it is absolutely necessary to keep the root in a cold wet towel.

This proceeding was adopted in five cases, and all the patients now possess strong firm teeth. The time required for the consolidation of the roots varies between a fortnight and a month, sometimes it is as long as six weeks. After this period the teeth give a perfectly metallic sound on percussion. The patients even state that they are firmer than the healthy ones, but this may be due to their perfect state of insensibility.

NEW METHOD OF WORKING VULCANITE.

BY H. C. BRAUN.

MOST Dentists have noticed the unfinished appearance the palatine surface a vulcanite denture presents, and to attempt to polish it is fatal to the accuracy of fit. Some use varnish or gum, but very few care to vulcanize on a tin model on account of the trouble and uncertainty. If, however, they proceed as follows, the result will be a clean plate of equal thickness, and the process does not take ten minutes longer than the old method.

Mount the case in the ordinary way and invest in plaster, then wash the wax out from the *palate only*, oil and pour in a little plaster almost as high as the teeth; smooth the surface and lay on a piece of sheet lead, cardboard, or several thicknesses of pattern lead, then fill up in the usual manner; when set open the flask, wash out the remaining wax, coat the model with collodion applied with a camel's hair brush, pack the case, and before screwing up remove the substance between the two parts of the reverse, which should be coated with collo-

dion at the last moment, and after vulcanizing, the denture will be as nearly perfect as if tin plates had been struck, and the model and reverse made of tin. For the production of a black case lined with pink, this method is very useful. Use two thicknesses of sheet lead, pack with black, remove one sheet and screw up, finish with pink, remove the second sheet and screw up finally.

CORRECTION OF THE DENTISTS' REGISTER.

WE should earnestly call the *immediate* attention of such members of the profession as have changed their address since the publication of the last "Dentists' Register" to the requirements of Section XII. of the "Dentists Act (1878)," which in effect requires that every registered Dental practitioner should be careful to answer, without delay, all inquiries sent to him by the Registrar of the General Medical Council, and also to send the Registrar immediate notice of any change in his address, in order that the *correct address* may be duly inserted in the "Dentists' Register," otherwise, by Section XII. of the "Dentists Act (1878)," such practitioner is liable to have his name erased from the "Dentists' Register," and thus, by Sections III. and V. of the said Act, to lose the right "to take or use the name or title of Dentist (either alone or in combination with any other word), or of Dental practitioner, or any name, title, addition, or description implying that he is a person specially qualified to practice Dentistry," and also the right to recover, in any court of law, "any fee or charge for the performance of any Dental operation, or for any Dental attendance or advice."

Unless they attend, *without a moment's delay*, to this necessary condition for enabling the Registrar to produce a *correct* Register for 1884, some of our readers will, we fear, through their own neglect, find themselves dis-registered in the immediately forthcoming edition of the "Dentists' Register."

All such alterations or corrections should be sent to the Registrar, W. J. C. Miller, Esq., Medical Council Office, 299, Oxford Street, London, W.

British Journal of Dental Science.

LONDON, NOVEMBER 15, 1883.

DENTAL SURGEONS AND PUBLIC INSTITUTIONS.

IN our last issue we had occasion to notice that a provincial Vestry had appointed a Surgeon Dentist to their Union. Now although we may be told that as "one swallow does not make summer," so one such appointment cannot be taken as evidence of more than a local awakening to "the eternal fitness of things," yet we are sanguine that such a supposition is inaccurate.

It is an undoubted fact that the tendency of the day is towards division of labour, and the natural outcome of such division is the specialisation of labour. On all hands it is accepted that to few can it be reserved to figure as an "admirable Crichton," so that men accepting this fact set themselves to pursue one branch of the many-limbed tree of knowledge, devoting themselves to it unreservedly, and so identifying alike themselves and their labours with the one line into which their lot has fallen.

It is, however, not our aim at present to develop the doctrine of specialism. For our purpose, we may safely assume that all civilised races regard Dental Surgeons as performing a function in society, which society gratefully acknowledges to be of superlative benefit to its members.

And it is more than surprising, when we have this consideration in our minds, that so little *active* recognition is taken of what is received passively by all. It did not require the facile delineations of Charles Dickens to tell us that England is a land where Bumbledom rules supreme, those of our readers who have peeped behind the scenes at the meetings of vestry or other corporate bodies, will endorse the fact of Bumble's ubiquity.

We must set ourselves dispassionately to enquire whether those large aggregates of schools, reformatories, work-houses, poor's and alms-houses and prisons, are fairly treated.

Let us impute no motive, oversights must and do occur even among the more thoughtful, so that we incline less to blame than to admonish; Minerva's distaff rather than Jove's fulminating shafts shall be our insignia.

One usually hears it stated that although these institutions have no specially appointed Surgeon Dentist, they yet possess a duly qualified surgeon, whose duty it is to ensure their bodily well-being. And, we are told, the whole includes a part! A surgeon as such must be a Dental Surgeon *and something more*. How grossly absurd such statements are goes without the saying. Take the average general practitioner in town or country, and estimate his knowledge of any branch of Dental Surgery, nay, more, ascertain from him, the extent of the instruction he enjoyed whilst an *alumnus* at a London or provincial school of medicine, and what will you find? We do not hesitate, you will find his knowledge *nil* and his instruction in this branch absolutely none.

He may be a skilled extractor, just as he is skilled whenever his dexterity is called into play—but it is his native adaptability which makes him so, he owes no debt of gratitude to his *Alma Mater*. Cheerfully he would confess that he knows himself to be quite unfitted to undertake any skilled work, or to offer any special opinion in the field of Dental Surgery. His manual dexterity is acquired at the expense of his patients. It gives him no claim to being called a Dentist.

To none do we more willingly yield due honour and praise than to the busy practitioner, and it is as much for his benefit as for that of his patients that we seek to agitate the question, "Ought not all public institutions, where large numbers of men, women or children are collected together, to have regularly appointed Dental Surgeons?"

The sanitation of our public buildings are superintended and the so-called preventable maladies are duly signalled off, but the rich harvest reaped of dental caries is merely accepted as a painful but necessary phenomenon of life. We maintain it is as much the business of the Surgeon Dentist to prevent dental caries as to cure it, and this view is adopted by the profession at large, and yet the purblind policy which but too often reigns in managing committees fails to see that if they take steps to ward off one group of disease, it is clearly their

duty to guard against the ravages of another. But how? Surely it is not asking a very wide departure from routine, when we desire the appointment of a Dental Surgeon to every institution, the number of whose inmates renders such a course necessary. To commit some two to four hundred children to the inspection of a skilled specialist, say once in a week, is not much, and yet the extent of the benefits accruing to the little patients either in curing or preventing their ills would be almost incalculable. *Fiat experimentum!*

Although the eye or the ear may demand special study, yet few general practitioners start upon their career without some experience in the ophthalmic wards and aural clinic, and the cases of ophthalmia and ear-lesions are either treated by the house surgeon or sent to a general hospital—they are not overlooked or treated upon intuitive knowledge, as are the cases of oral surgery. The Royal College of Surgeons, although having no special examinations in these branches of surgery, yet usually have upon the board of examiners men eminent as ophthalmic surgeons and as aurists, and “the paper” at “the final” often contains one question upon these subjects. But it is not so with Dental Surgery. Even advanced students never dream of studying the pathology of the diseases connected with the buccal cavity. They either presume that specialists will always be at hand, to whom they may appeal, or they wrap themselves in their cloak of ignorance and proclaim that “there is nothing in it.”

Surely does the experience of a few years alter their views. To the one class skilled workers are not always at hand, being crowded out of their just positions by inexpert matrons *et hoc genus omne*; and to the other, wider knowledge brings home the truth that “There are more things in heaven and earth, Horatio, Than are dreamt of in your philosophy.”

But it is a question for the profession, and it will be our aim to indicate from time to time how the profession can achieve the object, which can only redound alike to their credit and the well-being of the community at large.

PROF. CHANDLER, of Boston, speaking upon the subject of amalgams, states his views as to what an amalgam is. Ac-

according to the learned professor, an "amalgam is a metal and not a fusion." This is a hard nut for chemists. He believes good amalgams are superior to gold. He absorbs the excess of mercury, after the filling is made, by the use of pure tin. The use of tin also leaves a whiter surface to the amalgam than would otherwise be obtainable, nor does it render the surface soft. He commends the practice of using an amalgam while quite plastic and then absorbing the excess of mercury with pure tin. A more perfect adaptation to the walls of the cavity is so obtained than when the amalgam is used in a dry state. Tin must be applied to the surface of the filling until no more mercury is taken up.

DR. MENNIER, while writing upon the "Manifestations of Syphilis in the Mouth," says, "Tobacco and alcoholic drinks are the principal local causes of the syphilitic neoplasms of the region. And it is to be noted that the lesions in question are more often met with in males than in females." In support of this we may notice that smokers are subject to special forms of "slight ailments." Among those which affect the mouth, we notice leukoplakia. The white patches which are so characteristic, although occurring in non-smokers, are then counted as the heirloom left by alcohol and peppery foods.

FORMS which really come under the category of macroglossa are common. Indeed some authorities go so far as to say, that the tongues of all smokers become increased in size by a species of interstitial fibrosis. This increase in the fibrous structure of the tongue leads to a loss of suppleness imparting, in some cases, a distinct stiffness to the organ. Hyperæsthesia of the tongue also occurs in smokers. It is usually restricted to the lip and sides of the dorsum, giving rise to that very troublesome symptom, "sore tongue." Cracks and minute ulcers are common; these last are frequently so small as to be overlooked unless carefully sought for upon the surface and sides of the tongue after it has been thoroughly dried. It is certainly important to notice that as epithelioma can clearly be traced to sites subject to constant friction or irritation, so should we expect to find that disease commoner among smokers. Now although statistics bear out

the truth of this statement, we should not forget the other sources of possible irritation to which the mouth is liable. Smokers unquestionably prepare their mouths for the growth of neoplasmata, and yet are surprised at the harvest they reap.

CARIES AMONG THE SOUTH AMERICANS.—Dr. W. C. Barrett, of Buffalo, tells us he has found dental caries in the teeth of both Peruvians and South Americans. While exostoses existed, there were few irregularities. The abscesses met with are described as being as bad as any the more civilized world can produce. The skulls examined showed “teeth covered with tartar, and absorbed up to the very apex.” The extent of the ravages of disease is characterized as being “astounding.” These facts are a nut for the holders of the civilization theory of dental caries!

A PRE-HISTORIC FILLING.—Speaking at the Massachusetts Dental Society's Session Dr. Barrett says, “There were found in a cave in Mexico, six skulls, they were all dolichocephalic; there is a specimen of a jaw * * * of a muscular man, aged 60. There are in this lower jaw, two teeth with decay, and it is supposed that these two teeth are filled; if this be the case, there will be a record of an undisputed pre-historic filling. I believe that the substance in these cavities is a real filling material. * * * A substance of the same character [as the filling material] was found attaching the hatchet-head to the handle, it was attached by that cement alone, and it was quite sufficient to hold it in place.”

NEUROTOMY IN NEURALGIA.—The evidence of many cases collected to throw light upon the question of union of divided nerves, shows that the ends of divided nerves tend rather to grow together than keep apart. Even when so far separated as to require suturing, they are very amenable to treatment, as Mr. Clark, of Glasgow, has shown in his article on “Immediate Suture of Divided Nerves.” The practical point is this—simple neurotomy has but little, if any permanent effect in curing neuralgia; a portion of the nerve must be dissected out, or its ends sutured into neighbouring fibrous tissue, and so kept apart. Were we to take a lesson from traumatic

pathology, we should tear and bruise our nerve, not cut it and treat it antiseptically; but let us remember that such a thing as Tetanus does exist, and that lacerated nerve tissue tends to promote that terrible malady.

A CORRESPONDENT of the "New England Journal of Dentistry" writes: "Every professional man has been obliged to go through his 'waiting period,' and the manner in which this waiting is done has much to do with the future. Text-books at hand, the literature of the profession before them, the microscope on the work-table. With these and a proper sense of the importance of being well prepared for their life-work, any man can hew out for himself a pathway through the throngs of men that are fast crowding the professions, and who think because they know a smattering of the mechanical details of their business, there is no need for more, and wait for patients as the tradesman waits for customers, suffering the golden hours to pass for nothing in the way of facts learned to show them. Waiting without labour profiteth nothing; but earnest labour and patient waiting never goes unrewarded."

RIGGS' DISEASE—TEETH LOOSENEED BY SUPPURATION.—Remove the cause of the suppuration—take care that all foreign matter be scrupulously cleansed away, and then wash the mouth with:

R Carbolic acid	.	.	.	.	3 v.
Alcohol	.	.	.	.	3 iv.
Glycerini	.	.	.	.	3 i.
Ol. pimentœ	.	.	.	.	g ^{tt} iii.
Sol. red aniline	.	.	.	.	g ^{tt} ii.

is Dr. F. Y. Clarke's very sound advice.

TEETH AT BIRTH—ULCERATION OF TONGUE.—In a recent number of "l'Union Médicale," M. Jules Besnier records a case of an infant born with teeth already cut. The child suffered from coryza, and had consecutive ulcerations of its tongue. Dr. Lardier notices that he published a similar case in "Gazette Obstétricale de Paris," Aug. 15th, 1875. In his case the right lower incisor had been removed three days

after the infant's birth. The presence of the tooth had rendered sucking difficult at first, but when the tongue became ulcerated, the child could not suck at all. Hæmorrhage, although said to be dangerous in such cases, is really quite exceptional, unless of course the hæmophilitic diathesis be present. These prematurely developed teeth are undoubtedly rare, but we find many cases occur which are not put on record. The teeth usually require avulsion, but when they can be left to nature, it is customary for them to be shed very early.

THE opposite condition, non eruption of teeth in children and adults, occasionally occurs. We had a case under observation not long since. The patient, a phthisical woman, was quite and congenitally edentulous. Her mother had been so, and she stated that one of her children, a girl, suffered from the same defect. It is undoubted that dental abnormalities are commonly hereditary.

METHOD OF OBVIATING THE UNPLEASANT SMELL OF CARBOLIC ACID.—M. Lucas Championnière, writing in the "Journal de médecine et de chirurgie pratique," affirms, that while nothing will completely cloak the smell of carbolic acid, yet a good plan to lessen its smell, and prevent the chapping of the hands which its use entails, is to employ, not the non-crystallized acid, which is very objectionable in odour and is even dangerous; but the absolute phenol. For internal use, this last alone must be employed, for even if it be more expensive, it is at least more powerful, and so less is to be prescribed. For a weak solution, Championnière recommends:

Crystallized carbolic acid	.	1 part.
Glycerine		1 part.
Water		40 parts.

Double the acid and glycerine and we obtain his "strong solution." The glycerine is much to be preferred to alcohol. To mask the smell, he adds, a gram of thymol to these solutions, or a small quantity of the essence of lavender or thyme. These substances are about the only ones which will blend well with carbolic acid solutions without destroying its properties.

WE hear with pleasure that our *confrères* in Paris have at last started a first-rate Dental College. Some of our readers may have noticed No. 3, Rue de l'Abbaye, an old palace, which quite refreshed the sight after the uniform row of tall white houses. Instead of the monotonous "suite" of rooms on the usual French flats, with low ceilings and too much ginger-bread-gilding, we found an old house with large lofty rooms, in fact, a regular ancient Italian palace—with such an enviable hospital, and men like Messrs. Andrieu Brasseur, Mordaunt-Stevens, Colignon-Kingsley, Galliard du Bouchet, as senior professors and clinical teachers. We have no doubt of the future success of the "Institut Odontotechnique of France."

THE number of new entrants at the Edinburgh Dental Hospital and School, for the session 1883-4, is 10 dental for the whole term, and 5 medical for partial term; the medical term is intended for the instruction of army surgeons. The appointment of a Tutorial Dental Surgeon is giving great satisfaction to the students.

Manipulative Miscellany.

All instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month; they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits, and without any intention or wish to put one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

CODMAN AND SHURCLIFFE'S DIVIDING FILE AND POLISHER HOLDER.

MR. RUITERFORD has forwarded us a universal holder for dividing files or any small pieces thereof, which not only enables the operator to place a file, or convenient small piece, at any angle either obtuse or acute, with the axis of the

holder, but also at certain useful angles with its plane; by which means the holder may be held over the incisors and inclining downwards towards the tongue, whilst the surface of the dividing file remains perpendicular, and so can be readily used between the bicuspid and molars. The holder is equally well adapted for using in polishing stones or wood. It is a neat handle with a screw-nut at the top, and a pair of notched claws at the bottom, which are closed or open at will by means of the screw-nut, and firmly grip whatever may be inserted within them in any position that it may be placed.

NEW IRON PLASTER CASKS.

Mr. RITCHIE has introduced cylindrical iron cases or casks, with close-fitting lids for conveyance and preservation, of plaster of Paris. They are in convenient sizes, ranging from 7 lb. to 112 lb. capacity, are light and strong, and fitted with handles, hence well adapted for conveyance to or from the dépôts, either as "empties" or full, and being air-tight are calculated to keep the plaster in good condition for an indefinite period.

Literary Notices and Selections.

EXTRACTION OF DECIDUOUS TEETH.

By N. W. KINGSLEY, D.D.S., New York.

(Concluded from p. 983.)

Beginning with the last, it is a settled fact that the development of jaw bones and alveolar processes are entirely independent operations of nature.

There is a period in the history of the jaw when it is as much a jaw bone as at any subsequent time, and before a tooth has made any appearance. If through any freak of nature no tooth ever develops, the jaw will in no respect be aborted in its growth. It will continue to thicken and elon-

gate in the case of the lower one, and widen and enlarge in the case of the upper, until it has reached the full measure of its inherited type, and neither the absence of teeth congenitally nor their removal after development will interfere with this function.

But in the growth of the alveoli as a process of the jaw we find an entirely different condition.

Alveolas are the result of the development of the teeth and coincident with their growth. The alveolar processes to a certain extent are constantly changing. It is quite doubtful if a single bony particle of the alveoli of adult life formed a part of the alveoli of childhood.

In a purely physiological condition it is forming and absorbing—forming again and again absorbing—and again a third time forming, only to be absorbed again when the final issue arrives of the loss of the teth.

In a pathological condition this process of formation and absorption may go on repeatedly.

The mistaken idea of the shrinkage of the jaws must certainly be based upon changes which are apparent in alveolar processes, but which *do not involve the jaw*.

That the premature extraction of the deciduous teeth involves a contraction of the jaws is a mistake, and to a limited extent it is a misconception that such extraction will involve such contraction of the alveolar arch as will induce irregularity, either in the period or order of eruption, or the arrangement of the permanent set. This is true as applied to sixteen out of twenty teeth that make up the complement of the deciduous set.

The order of shedding and of eruption shows that the first to change places are the central incisors; secondly, the lateral incisors; thirdly, *not* the canines, but, frequently the second molar for the second bicuspid; fourthly, the remaining molar for the other bicuspid; and lastly the canines.

In a normal condition the jaw bones *continue* their growth *after* the growth of process about the temporary teeth has ceased, and thus as the period approaches for the eruption of the permanent teeth we find spaces between the temporary ones, thus enlarging the alveolar arch for the accommodation of the larger members of the permanent group.

The growth or enlargement of that part of the jaw upon which the deciduous dental arch is situated seems to have obtained its complete development at the period of shedding, and the incisors and bicuspidis will find room equal to their necessities.

The premature extraction of any or all even of these eight named teeth, will not interfere with the natural and expected enlargement of the jaw, but the premature extraction of the canine teeth will be likely to lead to most serious results.

After the jaw bone has ceased its enlargement there seems an almost universal tendency for the bicuspidis and molars to crowd to the anterior part of the mouth, and to fill any space in the alveolar arch that may not already be occupied. This is not only true in the formative period, but is equally true in adult life, if the occlusion of the opposing jaw does not counteract it. The consequence of this inevitable tendency is, that unless the temporary canines remain in their places until their permanent successors are ready to emerge, the bicuspidis and whatever molars are behind them will crowd forward and occupy the space which belongs to the canines.

We thus see that whatever may be the inducement to remove any or all of the deciduous teeth prior to their period of shedding, the canines should be retained until there is ample evidence of the early emergence of their permanent successors, unless the health and comfort of the child would be sacrificed in so doing. But it would be far better to remove one or all of the deciduous teeth and take the risks of irregularity in the permanent ones, than to submit the child to constant suffering and consequent injury to its health by their retention.

In a case of retarded dentition the writer takes issue with the practitioner who removes the deciduous teeth when the usual period arrives for shedding, regardless of any evidence that the permanent ones are ready to erupt. *His* reason is, that the retention of the temporary tooth retards the growth of the permanent one.

In this issue is involved the function of absorption, and his practice would indicate that the non-absorption of the temporary tooth was the primal cause of the retarded dentition, rather than that retarded dentition is the cause of the non-absorption. Cause and effect are in his mind evidently transposed.

Such a practice will unquestionably lead in many cases to serious results.

It is not always certain, when there is no outward indication, that a tooth lies concealed.

It is not a very uncommon thing to see some one tooth of the permanent set missing, and to learn that it never erupted. And again, a retarded dentition generally indicates teeth of better organization and less liable to decay than those which have developed at an early age.

So long as deciduous teeth remain in the jaw in a firm and undecayed condition, with no evidence of a misdirection of their permanent successors, it is not advisable to remove them.—*Independent Practitioner*.

NEW METHODS OF PRODUCING SURGICAL ANÆSTHESIA.

PAUL BERT'S LAST EXPERIMENTS—PROLONGED ANÆSTHESIA
THROUGH THE INHALING OF NITROUS OXIDE UNDER ORDINARY ATMOSPHERICAL PRESSURE; ANÆSTHESIA BY MEANS OF A MIXTURE OF
AIR AND CHLOROFORM VAPOUR.*

BY DR. HOLSTEIN.

WE intend to keep our readers *au courant* with all the new works on Surgical Anæsthesia. The subject is certainly of sufficient importance to merit particular attention; and although many methods† for producing narcosis by artificial means, which might be used in surgery with good effect would not be suitable in Dental Surgery, yet in our review we shall not leave them unmentioned: First because, under certain circumstances, these agents might suggest some ideas useful for Dental Surgery, and secondly, because from a scientific standpoint the subject of artificial anæsthesia should always be treated as a whole and not exclusively as belonging to this or that special province.

* "Centralblatt f. Zahnheilkunde," September, 1883.

† We instance, for example, the local Anæsthesia by means of ether spray (after Richardson), which, in extremity, is so convenient for small operations, but which is unfit for dental operations.

As to choice and grouping of agents we shall allow ourselves absolute freedom. Without pledging ourselves beforehand to follow any specified systematic course we shall notice those matters which throw light upon facts brought out by clinical experiments, and those appearing most fitting for discussion at the present time, as discoveries of the day, or because they stand in relation, more or less, to methods discussed in other parts of this paper. For this reason we have chosen for our first notice the new method of Paul Bert in anæsthesia, through the inhalation of nitrous oxide under ordinary pressure. The reader will see that this attempt almost forms a supplement to the article, "Paul Bert's method of producing ordinary anæsthesia through inhaling nitrous oxide and oxygen under a heightened pressure."

There can be no doubt that anæsthesia through nitrous oxide and oxygen under heightened pressure is a capital method. The safeness and striking effect have already been satisfactorily proved by a considerable number of clinical cases. ("Labbé's and Pèau's Operations.")

One may say that it realizes the ideal of surgical anæsthesia, yet for many observers it has one great drawback; viz., its costliness. The pneumatic cabinet, the pumps, vapour machines, &c., which are all very well for hospitals and great sanatoriums, for the consulting room of renowned and busy practitioners in a great city; but how shall a modest country doctor or Dental Surgeon procure this expensive apparatus? Where to find a method equally safe and effectual, but also cheap, and one that could be used under any circumstances, still remains an open question.

In his new experiments,* two of which we shall now treat, Paul Bert has exerted himself to solve these important questions, or at least to forward their solution.

It is known that many years ago, some great operations with the help of the pure nitrous oxide, have been accomplished in America. The patients were treated with the usual methods, and then the operation commenced. When asphyxia

* The original communication of Paul Bert, under the title, "Anæsthesiæ prolongée obtenue par le protoxyde d'Azote, à la pression normale." See "Comptes Rendues Hebdomadaires des Séances de la Société de Biologie," N. 18, 1883.

was imminent the mask was removed, and the operation continued during the few moments of anæsthesia, which followed on the breathing of pure air. Again nitrous oxide was administered, again the mask removed, &c. Experiments after the method of Paul Bert, which were tried upon dogs, produced the most pitiable results: cramp and cries, alternated with critical symptoms of asphyxiation, which with the slightest carelessness would speedily result in death. In the case of patients such a method must be decidedly rejected. However, Paul Bert sought to improve the method through the application of pure oxygen, instead of the ordinary air. In this way he thought to produce a saturation of the blood with oxygen so quickly, that before the passing off of the anæsthesia produced by the nitrous-oxide, he could again administer an inhalation of it.

He obtained, in fact, although not quite perfect, yet very cheering results. The prompt elimination of the freed nitrous oxide in the blood, led rather too quickly to the return of consciousness. In order to avoid these evil consequences, Paul Bert attempted to use, instead of the pure oxygen, a mixture of nitrous oxide and oxygen in almost the same way in which nitrogen and oxygen are contained in the air. If one first produces anæsthesia in an animal through pure nitrous oxide, and then causes it to inhale the above-mentioned mixture, then, thought Paul Bert, the anæsthesia would be for some minutes prolonged,—a time which is more than sufficient to procure for the blood the necessary oxygen; because the strong dose of nitrous oxide in the mixture would prevent the quick escape of gas from the blood, which means the return to consciousness. If one wishes to give pure nitrous oxide again, it must not be used to such an extent as to cause asphyxia, for now few inhalations will suffice to introduce into the blood the necessary contents of nitrous oxide.

So the danger of asphyxiation, and the premature restoration of consciousness can be avoided, and the difficult problem is solved.

Experiments on animals have proved the perfect accuracy of these suppositions. For example, Paul Bert succeeded in keeping a dog for half an hour in a condition of deep and unbroken anæsthesia through the above method. Paul Bert

invited physicians to try this experiment on men, a simple one, since only the use of the customary mask and two caoutchouc bags were needed, and promised through new experiments to ascertain the exact preparation of oxygen and nitrous oxide, which would be needed for anæsthesia.

In conclusion we will say a few words on another method of anæsthesia, which till now, Paul Bert has only tried on dogs, but which to every one who is acquainted in the smallest degree with chloroform and its dangers, must appear very rational and promising. Still more we are convinced that the fundamental idea which led Paul Bert to his experiments, has already occurred to many, because, so to speak, it lies upon the surface, and it is certainly astonishing that no one before Paul Bert has attempted any experimental research upon this point.

It is well known that many disputes have arisen over the causes of death by chloroform. However, lately many more incline to the opinion, that chloroform causes death through producing paralysis of the heart. This view we are convinced through numerous experiments upon dogs, is the correct one. If one gives chloroform to a dog, whose blood pressure and pulse are recorded by Marey's somewhat complicated, but very convenient apparatus, which, however, cannot now be described, one sees at once when deep anæsthesia begins, a sudden sinking of the blood pressure takes place, the horizontal undulatory blood pressure line (the undulations are pulsations of the carotid, and the heart's systole) becomes suddenly changed into a steep, almost perpendicular decline.

If one continues then to administer chloroform as long as deep anæsthesia lasts, the pulse remains at the same low level; and on the perfect restoration to consciousness it again rises slowly to its original height. Should chloroform be again administered the pulse line sinks even quicker and more perpendicularly, and would result in complete paralysis of the heart; instead of the more or less high undulatory pulse line one sees now a perfectly straight line running at the lowest level—the heart beats no longer, death has ensued.

So by these experiments we have sought to study the effects of a mixture of chloroform and air, and are convinced

that the application of such a mixture is the least dangerous method for the production of chloroform anæsthesia. This is proved in the following manner: The dog was tracheotomised, and through the tracheal opening artificial respiration was conducted. Fresh air was pumped into the trachea through a caoutchouc pipe. With this pipe is connected, by means of two little caoutchouc pipes, a bottle half filled with chloroform. Through closing the pipes in several places one could either use the air which was pumped in for artificial respiration, pure, or pass it through the bottle, and it let act upon the lungs more or less impregnated with chloroform vapour.

From this it seems that under the influence of a mixture of chloroform vapour and air powerful anæsthesia ensues, and one can regulate easily its course and limit. The blood pressure line sinks slowly in an oblique direction and can instantly be *fixed* at any height one pleases, by the use of a weak mixture of chloroform and air, in other words, through the influence of a weak mixture one can sustain at any degree one pleases the chloroform narcosis for any length of time without danger. Our experiments were made some time ago. We intended to investigate the subject at first only in its general bearing, and later to pass on to more exact measurement of the proportions of chloroform mixed with air, and to its introduction by natural ways. Then Paul Bert's communication appeared,* which was much in advance of us.

The celebrated physiologist narcotised animals through a mixture of 12 grams of chloroform with 100 litres of air. Anæsthesia came on quickly and almost without reaction. Then Paul Bert caused his animals to inhale another and weaker mixture of 8 grams of chloroform in 100 litres of air. This last could alone have produced a very slowly and weak narcosis, but was sufficient to protract that brought on by the stronger mixture, and that for the space of three and a half hours, without producing any disturbance of the circulation and respiration, while by the influence of the stronger mixture

* "Methode d'Anæsthesie prolongée par des mélanges doses d'air et de Vapeur de Chloroform, Comptes Rendues Hebdomadaires des Séances de la Société de Biologie," N. 23, 1883.

(12 in 100) the animal succumbed. This method is very simple, safe and within the reach of all, as the instruments needed are limited to two caoutchouc bags with pipes and mask. We warmly recommend this method for experiments.

THE ORIGIN AND GROWTH OF TEETH.

By SALLIE STRASBURG, Cincinnati, O.

(Continued from p. 1037.)

If this be true, the origin of a supernumerary dentine papilla is readily accounted for, while otherwise, special papillæ must originate independently and coincidentally with the supernumerary enamel organ, a circumstance that does not come within the range of probabilities.

When the epithelial cord has finished its course it has brought the primitive enamel organ to that point where its evolution will be completed, and immediately after the rupture of the cord the formation of the secondary follicle takes place. In the human embryo the remains of the cord of the primitive follicle may be found after the formation of the follicles of the permanent teeth; and it is likely that during the process of eruption these buddings become atrophied.

While the cord and lamina are undergoing modifications, the embryonic tissues in which the follicles are immersed also change their nature,—laminated elements appear, forming a loose and transparent network.

The osseous tissue of the jaw makes its first appearance at the base of the follicle, soon forming a horizontal layer, which separates the groove of the follicle from the canal reserved for the vessels and nerves. Lateral processes are then thrown out from this layer, or floor, and form the groove in which the follicles lie for some time without being separated by transverse partitions. But later, after the development of the crowns of the teeth, bony processes are thrown across this groove, forming cells for the lodgement of each follicle, with an opening toward the epithelial surface.

A vascular network of tissue surrounds each follicle, and ramifies the walls even to the surface of the enamel organ,

but does not penetrate it. The vessels of the bulb are entirely distinct, forming no anastomosing connection with the plexus surrounding the follicular wall.

ORIGIN OF THE PERMANENT TEETH.

Goodsir held that the follicles of the permanent teeth arise from a fold of the sac of the primitive follicle. According to the more recent authors, the theory of Goodsir is erroneous in regard to the genesis of the teeth. Kolliker and Waldeyer have succeeded in illustrating that certain prolongations of the primitive cord are destined to become the secondary teeth.

Kollman writes: "The cord of the permanent teeth arises from the remnant of the primitive cord, which after its rupture, produces those buddings or epithelial masses."

He believes that the enamel organ of the permanent tooth originates from a mass of those epithelial fragments. In a like manner he accounts for the production of the supernumerary teeth.

This new theory is equally erroneous; for it is considered by various authors that Kollman has neglected to follow out strictly, in their successive physiological phases, the phenomena of this special evolution.

The origin of those permanent follicles that have been preceded by corresponding temporary ones, is altogether different from that of those which had no such predecessors. The 20 follicles of the permanent teeth that succeed the temporary ones have a like origin, while the 12 other follicles (the molars of the adult), have a different mode of genesis.

The enamel organs of the permanent teeth, except those of the first molars, originate from the epithelial cords of other follicles, and not from the epithelial lamina.

The bourgeon for the follicles of the permanent tooth will be found at the point where the primitive cord merges into the enamel organ of the temporary tooth. The form of this bourgeon is cylindrical, terminating in an enlarged extremity resembling a gourd, at this stage of evolution. It takes a vertical direction, and passes between the osseous alveolar wall and the primitive follicle, along the internal or lingual face of the latter. The elements are the same as those of the primitive cord. The bourgeon is nothing more than a

diverticulum, or outgrowth of the primitive cord. This bourgeon represents the beginning of the permanent tooth. It sinks to the bottom of the osseous dental groove, where it soon loses its connection with the primitive follicle, though still retaining its connection with the lamina; while the primitive follicle, by the severance of its cord (which takes place just below the point where the secondary cord branches off), becomes isolated from the epithelial connection, and continues its individual evolution. It was doubtless by examining the jaws at the stage of development just referred to, without taking into account the earlier and later phases, and led to the belief that the cord of the permanent teeth emanated from the debris of the primitive cord, or directly from the epithelial lamina.

The descent from the secondary bourgeon into the dental groove is soon followed by the entire series of phenomena which are common to every follicular evolution.

While these phases of development are being accomplished, the stump of the ruptured cord which remains attached to the primitive follicle, becomes the source of those fragmentary growths and buddings, which always commence from the moment the cord is severed (about the fourth month), but it seems to occur in the embryos of other mammals a little earlier in the period of gestation.

Dr. J. E. Oudet positively denies that any of the permanent follicles are derived either from the cords or from the follicles of the temporary teeth. On the contrary, he claims that they emanate directly and independently from the mucous membrane.

Dr. G. V. Black's extensive observations in this direction have convinced him that, "although the epithelial cords of the twenty anterior permanent teeth generally arise from those of the temporary follicles, yet they do sometimes emanate directly from the epithelial lamina."

Now, these facts are claimed to be proven beyond a doubt, and if true, the secondary cord may emanate directly from either the lamina, the cord, or the follicle itself.

Some differences are observed also as regards the direction of the secondary cord in the different species. While in the human embryo it takes a vertical course, in those of the her-

bivora it follows an oblique direction, but passing above the temporary follicle, it pursues a curvilinear route to the internal or lingual face of the follicle.

The length of the cord, as a general rule, is governed by the height of the alveolar border and the direction of the primitive follicle.

(To be concluded.)

Dental News.

MEETING OF THE MIDLAND BRANCH OF THE BRITISH DENTAL ASSOCIATION.

AN Extraordinary Meeting of Members and Associates will be held in Birmingham, on Saturday, Dec. 8th, 1883.

PROGRAMME OF PROCEEDINGS.

12 noon.—Members and friends will meet at the Dental Hospital, 71, Newhall Street.

1 to 3.—Clinical Demonstrations at Hospital.

3 to 4.—Reception at the Medical Institute.

4 to 6.30.—Papers and Discussions. Particulars to be announced hereafter.

Exhibition of Microscopical and other Specimens in Medical Institute. Members having specimens, or interesting models, are invited to exhibit them.

6.45.—Dinner at Grand Hotel. The President (Roff King, L.D.S.) in the chair.

Tickets, exclusive of wine, 7s. each.

Dressing Rooms will be provided at the Grand Hotel.

The following hotels are conveniently situated: The Grand (Colmon Row), The Queen's, The Great Western, The Midland, The Stork, and The Colonnade (Temperance Hotel).

W. H. WAITE, *Hon. Sec.*

VACANCY.

DENTAL HOSPITAL, 29, York Street, Dublin.—Dental Surgeon required. Applications to the Registrar by Nov. 17th.

APPOINTMENT.

Mr. HENRY C. CARTER, L.D.S.I., has been appointed Assistant House Surgeon to the National Dental Hospital, Great Portland Street.

Correspondence.

[We do not hold ourselves responsible for the opinions expressed by our Correspondents.]

NEW MODE VULCANIZER.

To the Editor of the "British Journal of Dental Science."

In further reply to "N. Z." :—

"A. H.," who was present at a demonstration, says that Dr. Campbell admitted that the inner chamber did not attain 320° when Gartrill's guage registered that heat ; but that was understood to be the right indication when celluloid should be pressed ; 10 to 15 minutes being allowed for the flask to heat through first. He thinks "N. Z." failed through following the instructions and not giving sufficient time. He says, "Dr. Campbell used black rubber, and took five hours to vulcanize at 320° , and expects the inner chamber never exceeds 250° , with the outer at 320° ." He can only guess that, because it is felt to be detrimental to the "New Mode" this important matter is not made clear in the instructions.

As to the wearing qualities of celluloid, he deduces from Dr. Campbell's beautiful specimens of black rubber *faced* with celluloid, that he trusts to the rubber for wear, and asks if celluloid keeps its colour in the mouth, as if not he thinks we shall be driven to use the continuous gum facings of Mr. Verrier.

[Those who have once succeeded in mastering the initiatory difficulties of Mr. Verrier's beautiful process, require no driving.—ED.]

Mr. W. Baker, L.D.S.Eng., has never had such good results with rubber or celluloid in any other machine. With respect to rubber, except stating that he sees the machine is in perfect working order, he unfortunately gives no details, although he has "not depended on printed instructions;" but

in celluloid work he allows "two hours heat and dry the investment with thermometer at 320°, inserts celluloid and pack in ten minutes, using superfine plaster."

Mr. J. P. Mann, D.D.S., obtains proper results by: Looking well to the packing round the injector tap; filling the outer boiler with water until a flow is perceptible in the inner, closing the injector tap and heating up to 335°.

To the Editor of the "British Journal of Dental Science."

SIR,—Perhaps some of the readers of your valuable Journal would give me a little assistance with regard to hardening plaster models with "liquid silex." I have applied the liquid both before and after drying the model, and I find a salt invariably forms on the surface. Can this be avoided?

Yours, &c.,

STEATITE.

MONTHLY REPORT OF CASES TREATED AT THE DENTAL HOSPITAL OF LONDON.

FROM OCT. 1ST TO OCT. 31ST, 1883.

Extractions	{ Children under 14	518
	{ Adults	903
	{ Under Nitrous Oxide	409
Gold Stoppings		129
White Foil ditto		8
Plastic ditto		549
Irregularities of the Teeth treated mechanically		102
Miscellaneous Cases		399
Advice Cases		124
Total		3141

J. O. BUTCHER, *House Surgeon.*

MONTHLY REPORT OF CASES TREATED AT THE NATIONAL DENTAL HOSPITAL, FROM OCT. 1ST TO OCT. 31ST, 1883.

Number of Patients attended		1619
Extractions	{ Children under 14	452
	{ Adults	912
	{ Under Nitrous Oxide	295
Gold Stoppings		64
Other Stoppings		405
Advice and Scaling		229
Irregularities of the Teeth		90
Miscellaneous		175
Total		2622

CHAS. W. GLASSINGTON, *House Surgeon.*

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 82, Mortimer Street, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
3. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
4. All communications relative to subscriptions and advertisements are to be addressed to the Publisher, Mr. J. P. Segg, 82, Mortimer Street, Regent Street, London, W.
5. The Journal will be supplied direct from the office on PREPAYMENT of subscriptions as under:

Twelve Months (post free) 14s. 0d.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skliros, 82, Mortimer Street, Regent Street, W. A single number sent on receipt of seven (penny) stamps—

ANSWER TO CORRESPONDENT.

Dens cum dolore.—Such practices will probably *never* die out. The advertiser need not even be on the Register if he only abstains from styling himself “Dentist.” The incoming-educated members will never so disgrace themselves or the profession.

Communications have been received from Messrs. Dr. W. Bunton (London), Dr. G. L. Parmele (America), W. Bowman Macleod (Edinburgh), J. P. Thompson (Brussels), Ash and Son (London), G. Rutterford (London), G. Ritchie (London), Waite (Liverpool), A. Rayner (York), C. Somerset (London), Dens cum dolore, Steatite, H. C. Braun (London), Fair Play, Peacock (West Brighton), H. C. Carter (London).

BOOKS AND PAPERS RECEIVED.

“British Medical Journal,” “Gazette des Hopitaux,” “Repertoire Dental,” “Dental Luminary,” “Scientific,” “Dental Cosmos,” “L’Odontologie,” “Centralblatt für Zahnheilkunde,” “Revue Odontologique,” “Dental Record,” “Missouri Dental Journal,” “Glasgow Medical Journal,” “American Journal of Medical Science,” “Chemist and Druggist,” “Dental Advertiser,” “New England Journal of Dentistry,” “American Journal of Dental Science.”

NOTICE.—We desire that it may be clearly understood that our pages are open to all for free expression of their views on matters connected with our profession. We only ask for terseness of expression and MODERATION IN TONE.

When otherwise unobjectionable, difference of political or other opinion will never be regarded by the Editor as a disqualification for the admission of any communication to the pages of the BRITISH JOURNAL OF DENTAL SCIENCE.

British Journal of Dental Science.

No. 381. LONDON, DECEMBER 1, 1883. VOL. XXVI.

THE EXPERIMENTAL STUDY OF THE ACTION OF ANÆSTHETICS.

By DUDLEY W. BUXTON, M.B., B.S.Lond.

WHEN we consider the very heavy mortality which results each year from the administration, or, let us say, during the administration of anæsthetics, we are tempted to enquire, how it is that more of the attention bestowed upon the experimental portions of medical science has not been directed into such channels as might eventually lead to lessening that mortality. It is indeed open to question whether anæsthetics are responsible for a tithe of the deaths at present attributed to them. But even assuming a tithe of persons die under the hands of the anæsthetist, it is still incumbent on workers in this department to enquire why such people die, and how far such deaths can be prevented.

In England, the very rapid extension which has taken place in the administration of anæsthetics, has placed in the hands of a vast number of medical men, a series of dangerous agents. The majority of these practitioners can have but little experience in even the common methods of administration. The hospital curriculum of two years, or at the outside three, can seldom afford a man many chances for the actual performance of the duties of an administrator of anæsthetics. He may see a large number of cases, in which one or other of the commoner anæsthetic agents is employed, and may have a few discursive hints, of a so-called "practical character," bestowed upon him. Still, to see another man perform an operation is very different from undertaking the same thing yourself; in the former case you are a mere irresponsible on-looker, in the

latter, life and death hang on the balance, and it is your hand which determines which way the beam swerves.

At the first introduction of anæsthetics into surgery, when Liston with anxious eye watched the quiescent form before him, ere, almost doubtingly, he undertook that grave surgical operation, the amputation through the thigh; when the world debated the advisability of the employment of these powerful agents under *any* circumstances; then was it that the heavy responsibility resting on this measure was fully, perhaps excessively appreciated. But *tout cela est changé!* Many men will now undertake an operation, whilst they administer the anæsthetic themselves. Many who hold no legally recognised medical or surgical qualification, both in hospitals and outside these institutions, are in the habit of almost daily "giving," as the phrase goes, nitrous oxide, chloroform, or ether. Because more deaths do not occur, there is undoubtedly a terrible callousness as to the administration of all narcotic agents.

A danger unforeseen, or but imperfectly appreciated, will seldom deter men from undertaking procedure which a more skilled or better informed individual would shrink from, or undertake with the utmost diffidence, and with every possible precautionary adjunct.

When we consider, then, how poor an equipment the general practitioner must as a rule possess, when he undertakes the duties of an anæsthetist, and that his instruction has, in most cases, amounted to a few lectures, or a casual glance through one of the manuals now in the hands of the students, it is not surprising that we find his method mere rule of thumb, and his temerity or nervousness excessive. Nothing can be more painful than to see a careless, because ignorant, administration of anæsthetics; nor can any degree of mental suffering be much worse than that a man undergoes whilst having resort to an agent, which he knows to be deadly, but with the uses of which he is but imperfectly acquainted. How then can we remedy the evils to which we have adverted? One factor in achieving such a desirable consummation must consist in consolidating our scientific knowledge of the re-agents already in use, and in pursuing researches, the object of which is to improve methods already in use, or to introduce fresh ones.

In spite of the most untoward disabilities under which all scientific research of an experimental nature is prosecuted in England, the solution of many burning questions in the field of anæsthetics may yet be hoped for, and it may be, are not far distant. It is matter of regret, that most English observers in this department have devoted themselves more exclusively to what we may call the clinical side of the research. Fatalities, occurring upon the operating table, have forced upon the attention of surgeons the imperfections of our present methods, and so it has resulted, that these surgeons, essentially working from the clinical standpoint, have given to the world the results of their experience and experiments; have, in fact, worked backwards, from the patients to the anæsthetic. On the other hand, some, whose attention has been given almost solely to the administration of anæsthetics, have undertaken the introduction of fresh re-agents. A lack of cohesion is found to exist among the results so obtained. Nearly every observer has undertaken a fresh departure, and has, in too many cases, permitted his individual conclusions to swamp the broad questions at issue. It appears to us, that the already large number of substances employed, require us rather to undertake researches which shall elucidate how these allies shall be administered, rather than which of them should supersede its fellow.

To satisfy us upon these points, we must go outside English laboratories, and seek in France and Germany for those philosophical experiments which, it appears to us, should have originated here. What Snow and Clover did so much for, should surely find in England a fostering mother, and escape an unkindly ostracism. We do not deny that some English workers have undertaken to elucidate some of the bye-issues, but we fail to discover any elaboration equal or approaching the investigations of Paul Bert or Brown-Séquard.

Paul Bert's researches have been directed in two channels, or perhaps we should more accurately say, two among many. The one is to show how far the pressure under which a gaseous body exists when entering the lungs, affects its relations with the blood stream—how such pressure modifies the gaseous interchange between the corpuscles and the nitrous oxide; and so, of course, as the result of this, how far can the

de-oxidation of the blood be pushed. These experiments, made in the first instance on animals, seem to have been confirmed by employing similar methods in the operating theatre. And they are certainly of sufficient importance to warrant a detailed description, as none such exists in this language. As will be seen in the sequel, Paul Bert's method necessitates a somewhat elaborate paraphernalia, but there can be little doubt that if his reasonings stand the test of a searching experimental criticism, that the mere cumbrousness of the *materiel de guerre* will sooner or later be done away with and replaced by a simple substitute.

In the second line of research, which we have indicated above, Paul Bert has been engaged in considering the question of how far diluted chloroform vapour will produce sufficient anæsthesia, and yet avoid imperilling the life of the patient. Several other workers, more especially in France and Germany, have undertaken somewhat similar experiments, and in the main the results arrived at have tallied, although at present we cannot say that anything like a satisfactory final conclusion has been arrived at, nor should we expect it.

But before entering more into detail, upon these researches, we must consider what is the ideal anæsthetic, in other words, at what are we aiming to obtain, when we arraign the different agents before us, and decide which is and which is not to be an anæsthetic of the future. Clearly we would abrogate sensibility, but maintain consciousness. We would place our patient in the position of such an one, as from diseased conditions of his central nervous system, fails to appreciate our touch, even although he is aware of our presence. The drugs which we now employ have to enter the blood stream, and so extend their deleterious effects to every organ of the body, as is the case with nitrous oxide; or else effect a much larger surface of the nervous system than is consistent with our needs or wishes. If the peripheral nerve-endings of the vagus in the lungs could be affected by our vapours, without the inhibitory fibres being also brought under the action of the agent employed, we should achieve our object, or, at all events be nearer achieving it. Our present methods in this respect, are radically wrong.

It remains to be shown, however, whether or no the mos

curious and interesting researches by Brown-Séguard will not effect a most profound alteration both in our theories and our method of procedure. It will be our effort, in succeeding papers, to examine in detail the researches herein alluded to, and as far as possible indicate the practical lessons which can be deduced from the results at which these experiments have arrived. To Dentists it is a matter of no small importance that the patient should be absolutely quiet, and his efforts should not be frustrated by a cumbrous mouthpiece or too rapid recovery from the anæsthetic. And although nitrous oxide is so largely used by the profession, it cannot be doubted that they would welcome with avidity either a more perfect method of the administration of nitrous oxide by its replacement by an agent as safe, but which was capable of prolonging at will the length of time which anæsthesia endures.

ON THE RELATIONS BETWEEN DENTAL LESIONS AND DISEASES OF THE EYE.*

By HENRY POWER, M.B.Lond., F.R.C.S.,

OPHTHALMIC SURGEON AT ST. BARTHOLOMEW'S HOSPITAL, AND SURGEON TO
THE ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, ETC.

THE connection between dental disease and affections of the eye is not at first sight very apparent, but it has been noticed, though for the most part only casually, by many writers. I have thought that it might interest this Society, and might at the same time be serviceable to those who are engaged in ophthalmic practice, if I attempted to collect some of the evidence which seems to demonstrate that dental disease may excite various ophthalmic affections ; that it might also be the means of eliciting valuable hints from those who are engaged in dental surgery, and that it might afford an opportunity for the citation of cases which, though exceedingly interesting when considered in connection with others of the same nature, may not have been regarded by those in whose experience they have occurred as of sufficient importance to merit reporting.

I have taken some trouble in looking through the treatises

* Read at a meeting of the Odontological Society of Great Britain, Nov. 5th, 1883, and reprinted from the Transactions of the Society.

of those authors who have written in the course of the last hundred years, and I think it may be said that the connection between dental and ophthalmic disease has not been specially dwelt upon in this country before the year 1824. Beer, indeed, before this spoke of a consensual affection of the eye which might occasionally be due to carious back teeth; but no mention is made of the teeth by Ware or by Chandler, who both wrote in 1780, nor by Scarpa, whose treatise was translated by Briggs in 1806, nor by Weller in 1821. Scarpa, indeed, in his account of ptosis, states that it may be produced by indigestion and gastric disease, and by the presence of worms; and in speaking of amaurosis holds that it may result from contusion and laceration of the supra-orbital nerve.*

Weller (1821), in like manner, who copied the great German oculist Beer, though he does not allude to the teeth, and of course does not speak of reflex actions, yet recognises this class of affections when he refers various forms of amaurosis to sudden suppression of lactation and acute cutaneous affections, and to loaded bowels, whilst he elsewhere refers strabismus and blepharospasm to worms in the intestinal canal. The first writers I have met with who distinctly refer to the teeth are Travers, who speaks of strabismus caused by difficult dentition, and Frick, who, in 1826, speaking of the causes of strabismus, remarks that it is "often concomitant with difficult dentition;" whilst Welbank, who translated Erick's book, in a note on the treatment of amaurosis, states that he has obtained good results from the employment of carbonate of iron in cases of amaurosis "proceeding from disease of the dental nerves." After this period, difficult dentition and dental disease are often mentioned incidentally amongst other causes of ophthalmic disease.

I presume that you will all accept as a fact, that which is admitted by all ophthalmic surgeons, that there is such an affection as reflex or sympathetic ophthalmia, that is to say, that irritation of one set of branches of the fifth will affect those of the opposite side; yet in discussing the subject before us it seems to me, in the first place, important that I should very briefly put before you the evidence showing that

* Scarpa (p. 511) gives many cases of reflex amaurosis.

reflex irritation of the eye really occurs. If any ophthalmic surgeon be asked why he believes in reflex irritation of the globe and its appendages, his mind at once reverts to many cases in which injury to one eye, especially of the ciliary region, has been followed, after a period of very variable duration, by inflammation of the uninjured eye of a low but steadily progressive type, generally involving all the tissues, and leading to more or less serious impairment, or even to complete loss, of vision.

I could give many cases from my own experience. I will limit myself to two.

A young man presented himself to me at St Bartholomew's Hospital, Chatham, saying he had been struck with a piece of the head of a chisel on the eye. His vision had previously been perfect. On examination there was a wound in the cornea, a rent in the iris, blood in the anterior chamber, and traumatic cataract. He could see light, and the shadow of the hand. I had no doubt that a fragment of metal was in his eye, and that practically the eye was lost. I recommended its removal. He declined. A week after, perception of light still remaining, he again declined to have anything done. Soothing remedies were employed. About six weeks later he came with the opposite eye sharply inflamed; there was dimness of vision and general inflammation of the globe. He was now anxious to have the eye originally damaged, from which he had suffered a martyrdom, removed. I did that operation, but it was too late; the inflammation ran its course in spite of careful treatment, and he lost the sight of both eyes. That is the usual result.

A second case. Two lads sitting at the same desk. One presents a steel pen to the eye of the other, when his head is averted, and calls his name; he turns his head to the speaker, and the nib of the pen makes a punctured wound at the outer border of the cornea. A slight protrusion of the iris takes place. He continues his work, with gradually increasing irritation in the damaged eye, for three weeks, when suddenly vision in the second eye commences to be impaired. He is unable to accommodate his eye for near objects, and iritis sets in. The gravest anxiety is felt that total loss of vision will ensue, but fortunately this result was

averted ; by keeping the lad in perfect darkness for a month, and by appropriate local and general treatment, the reflex or sympathetic irritation gradually subsided. and by a singular piece of good fortune the injured eye also quieted down, and absolutely perfect vision was recovered in both eyes. This is an unusual result of sympathetic ophthalmia.

It is, however, by no means necessary that irritation, even when it is very severe on one side, should necessarily radiate to the opposite eye, or to other nerves.

Curious cases sometimes occur, and it is as difficult to say why inflammation does arise in one case as it is why it does not occur in another.

About 1870 a man presented himself to me at the same clinic with severe injury of the eye, also from a piece of iron broken off the head of a rivet : the eye was laid open by the fragment, and vision was lost. I recommended removal of the globe. The man declined. He went to Maidstone. The surgeon—I believe, Mr. Adams—gave him, he said, the same advice, but he was determined not to have it done. He recommenced his work, and the eye gradually quieted down, but from time to time he suffered severe pain in it, and had to discontinue work for some days ; still the other eye remained strong.

(To be continued.)

FLUXION DENTAIRE.

By Dr. MAGITOT, of Paris.

(Concluded from p. 1050.)

TREATMENT.

The treatment must fall under two heads : the therapeutic management of the immediate symptoms, and that of the initial lesion. The choice between the various methods of procedure must be made in reference to the particular form of the attack which we have to combat, and also according as we are called upon to interfere early or late.

If we find our case in the first stage of *fluxion*, we have to enquire both as to the exact degree of the local phlegmon and also of the nature of the constitutional symptoms. In the absence of these last, and if the *fluxion* is purely one of the

œdematous kind, the ordinary precautions and soothing applications will assist in the dispersion of the swelling, which indeed tends naturally towards resolution.

In the case of the simple phlegmonous *fluxion*, it is absolutely necessary to discover the seat of the initial lesion, since upon this depends the choice of the means to be employed. If the initial disease is recognised as being curable, it is incumbent upon us to attack the local trouble and to open the abscess and drain it. Moderate but methodical compression of the parts must be practised, and as soon as possible therapeutic remedies applied either to the gum or tooth which is at fault.

Should we recognise the remains of a fang of a tooth or of a piece of necrosed jaw, or of any foreign body, the presence of which is a source of constant irritation, we must at once effect its removal.

But this is far from being an absolute rule, for we often discover the existence it may be of deep-seated disease of the jaw, or a dental caries which, although penetrating, can yet be cured with preservation of the organ and its return to its ordinary functions.

A tooth itself, free from caries, but affected by periostitis, may often become the cause of a *fluxion*—it is sometimes a canine or an incisor which has suffered some injury in front, and the preservation of which in all cases is important, and is desired by the patient. It is then necessary, as we have shown, to weigh the advantages and inconveniences which will follow the extraction of the tooth when we discover that the presence of the *fluxion* is symptomatic of a recent injury to a tooth.

We do not hesitate to affirm that, in our opinion, the appearance of a phlegmonous *fluxion* is not in itself sufficient to establish the necessity for the avulsion of the tooth. Indeed such an act presents the worst chance of effecting a cure; it is well known that, at the present time, the resources therapeutics bring to bear upon even the most advanced stages of dental disease are both numerous and varied. The treatment of penetrating caries by direct applications is sufficient to put a stop to any concomitant periostitis, even although it has reached a fairly advanced stage; if this last lesion is of longer standing, being accompanied by a serous or purulent

discharge, drainage will often effect a complete cure. Still there are many more serious lesions of the periosteum with loosening of the teeth, fungoid growths and necrosis about the root, which may be still curable, and it is in precisely such cases as these that we have employed, with almost unvarying success, that curious method of transplantation, which consists in the re-section of the crown itself, preceded by an extraction, and followed by an immediate re-insertion of the tooth into its socket.

Having then this both exact and most useful ally among our therapeutic resources we should, when we have determined the possibility of its employment, either proceed at once to make use of it, or should wait until the external trouble has calmed down. In this last case we must proceed wholly with the treatment of the *fluxion* itself, ensuring the limitation of its extension and the avoidance of complications. The treatment is that employed in the cure of simple circumscribed inflammations.

If then we are brought face to face from a therapeutic standpoint with that last form of *fluxion* (the serious form), the diffuse phlegmon, the marshalling of the means to be employed must be very different. There may be a serious lesion of the alveolar border, such for example as a necrosis; there may be serious symptoms arising from the eruption of a wisdom tooth, which is the primitive cause or starting point of the morbid process, and to these the surgeon has to direct his attention, and has to do so with such a precisional knowledge and celerity of action as shall control the violence and danger of those symptoms which afflict their patients.

Take such a case, if you please, as occurs most commonly, when the compression of the wisdom tooth occurs, coupled with a severe *fluxion*, which is accompanied by general symptoms; the formal rule is—extract the wisdom tooth; but we must remark that such a cut and dried formula savours more of theory than practice; for the tooth in question, by reason of its inclusion in the jaw and on account of the spasmodic muscular contraction, often almost absolute, which is a constant sequela, resists all instrumental procedure. There is no necessity for an absolute avowal of impotence since there always remains an extreme course of practice, namely, to effect

an artificial opening of the buccal cavity with the aid of general anæsthesia and to penetrate almost to the seat of disease. But it should be well understood that in the course of such a tentative proceeding the surgeon has in a measure his hand forced. It would be of the greatest imprudence, after such a preliminary manœuvre, to abandon the operation, even on account of many difficulties, and so to permit the *fluxion* to run its course, greatly aggravated by his fruitless endeavours. It is then of the first importance to relax the tension of the part at any price. Should the wisdom tooth itself be able to resist all attempts at its extraction we then are forced into that resort which consists of the removal of the tooth in front of it. We have in this the means recommended for a long time by the writers on this subject, which is often most fortunately palliative, sometimes even curative, and in this way, that the wisdom tooth henceforward relieved of all pressure returns to its normal process of evolution, and achieves its eruption. We must add further, that this result relatively so satisfactory can only be realized in some cases, namely, before the supervention of inflammatory processes, and before the stripping of the maxilla and extension of the purulent focus should have so disorganized the tissue as to have led to mortification. It would seem from what precedes that we advise operative interference in every case, and that it should be directed towards the wisdom tooth, but even here there can be no absolute rule, for we are often forced, by the absolute impossibility of such measures, to limit our treatment to the diffuse phlegmon itself. The plan of treatment offers no peculiarity over and above what we recommend in analogous cases: ample and deep incisions, drainage, &c.; then, when the inflammatory process has abated, attention should be paid to the original cause of the trouble.

If then it is incumbent upon us to collect in a few words what may be said of those therapeutic methods which are applicable to *fluxion*, we will formulate them as follows:

1stly. In the œdematous *fluxion* the usual mode of applying soothing applications and treatment of the primitive lesion.

2ndly. In the phlegmonous *fluxion* treatment of the simple phlegmon by the ordinary methods, opening the gathering, drainage, &c.; then the cure of the original mischief or the

extraction in the case of fragments of teeth, &c., or foreign bodies, the preservation of which is deemed impossible.

3rdly. In the case of the diffuse phlegmonous *fluxion* direct and vigorous interference with the original cause of the mischief is formally and imperatively indicated.

MATERIA MEDICA.*

By Mr. STAINER.

MR. PRESIDENT AND GENTLEMEN: The subject I have chosen for my paper this evening is "Materia Medica;" and, gentlemen, acting upon the advice of our most worthy President, at his opening address, I have endeavoured to make it as original and comprehensive as possible. Of course it will be obvious to you all that the *entire* subject of "Materia Medica" could not be embraced in one short reading, for the pharmacist, like all other scientists of the present day, is stretching far and wide in search of more material to add to the already almost endless list of modern therapeutic agents, wherewith to supply the physician, of whom he is, so to speak, an apostle, and acting either synthetically or analytically under his directions, producing new remedies whereby the physician by his skill and ability may better control those abnormal changes and disturbances in the human body understood as disease. By disease then, to suit our convenience this evening, we will consider is meant something to treat; by "Materia Medica," something to treat the disease with. Now the modern physician does not rely solely upon medicine in the treatment of disease, but he makes the treatment of the disease subordinate to the treatment of the individual; for instance, if the case is one of dyspepsia, produced by indiscreet food, he first of all changes the diet, whereby he removes the cause, then treats the disease. From the vast number of substances in the "Materia Medica" I have selected those with which an acquaintance of the properties would, I thought, be of the most service to the dental student, who undoubtedly, at some time of his professional career, will be

* Read before the Students' Society of the Dental Hospital of London, Monday, Nov. 12th, 1883.

brought either directly or indirectly in contact with, perhaps, something like the following manner : A patient consults the dental surgeon and states that having suffered great pain about the facial region he sought medical advice, but getting no relief, has been advised by friends to try a Dentist, and now wishes the teeth to be examined ; at the same time explaining, in the best way a patient could, the kind of treatment they had been under ; or the medical man himself introduces the patient, and explains to the dental surgeon that, having tried some of the following medicines of the "Materia Medica," such as chloral hydrate, croton chloral, opium, quinine, tincture of gelsemium sempervirens, bromide of potassium, &c., none of which had given relief, he could come to no other conclusion, but that the teeth were the cause of the pain from which the patient is suffering. Here then are cases where the dental surgeon's knowledge of "Materia Medica" would be of great use to him, for he would be able to exchange ideas with the medical man on the properties and doses of the reputed remedies which had been employed, and the nature of the treatment adopted.

An example of the latter case actually occurred about twelve months since, when the newspapers announced, "The Indisposition of Prince Bismark." A short time after I read, in one of the daily papers, that his indisposition was supposed to have been caused by neuralgia, but the pain not yielding to his physician's treatment his Dentist was consulted, who diagnosed the case, extracted a tooth, and the Iron Prince of Germany was at once relieved. Here then was a case where the physician and dental surgeon were brought together for the same object, and I make no doubt but the physician fully explained to the dental surgeon the treatment he had employed. Similar cases to this are recorded in last month's "Dental Cosmos," from one of the New York Odontological Society's Meetings. And here I may venture to remark, that perhaps at this very moment some dental student is asking himself the question, What length of tether will my L.D.S. qualification give me to put into *practical* use my knowledge of "Materia Medica ;" besides understanding the physician's treatment shall I have a right to give my patient a prescription for an anodyne liniment to

assist me in relieving an attack of facial neuralgia, or prescribe a sedative draught to ease my patient from the pain which sometimes follows the extraction of a tooth, or a saline aperient to aid me in cutting short the inflammatory condition of periodontitis? I have avoided entering into the details of the tedious and sometimes complicable methods of producing the various preparations of the "Materia Medica," but should any student desire to make himself acquainted with them, I would refer him to Attfield's "Chemistry, General, Medical, and Pharmaceutical," confining myself to describing the different substances, their physiological effect, therapeutics, and doses. It would have afforded me great pleasure to have been able to place a specimen of each before you at the time of describing it, but unfortunately I could not do so. I must confess I was somewhat puzzled to find out the best to begin with, but as we are nearly all in daily contact with chloroform, I have selected this substance for the first.

CHLOROFORM.

Its History.—This liquid was for a long time known in an impure state and regarded as a chloride of carbon. Dumas in 1834, was the first to make a correct analysis of the pure compound.

Its Physiological Effect.—In the liquid state, in moderate medicinal doses, chloroform is stimulant and antispasmodic. In larger doses it is narcotic, impairing sensorial power and producing drowsiness. In very large or poisonous doses it appears to produce such effects as might be mistaken for poisoning by alcohol. The following quotation may perhaps be interesting. A man swallowed four ounces. After taking this large dose he was able to walk a considerable distance, but he subsequently fell into a state of coma. The pupils were dilated, the breathing stertorous, the skin cold, the pulse imperceptible, and there were general convulsions. He recovered in about five days.

Therapeutics in the Liquid State.—Dr. Hartshorne, of the Pennsylvania Hospital, has made many trials of chloroform in large doses in water. In a case of painful neuralgia of the head the patient took 75 drops at night, slept better than she had done for weeks before, was very comfortable the next day, and continued to improve under its use. The

aqua chloroformi is now being employed by some dental surgeons in treating ulcers of the mouth, caused by irritation from decayed teeth, with much benefit, it possesses soothing and antiseptic properties, and soon causes a healthy action to be set up; it is perfectly safe and pleasant to use and may be given to the patient as a "mouth-wash," to be used frequently, $\text{ʒi} +$ to ʒxxv . The dose of chloroform in the liquid state may be from m̄v to m̄xx or more; but, as just shown, the physicians of the United States have been long in the habit of prescribing it in much larger doses.

The Therapeutical Effect of Chloroform Vapour.—In the convulsions of infants during dentition, the inhalation of chloroform has been highly beneficial in arresting those convulsions when ordinary remedies had failed. I have witnessed its administration in the following manner: About 20 drops were placed on a folded handkerchief, and held at a distance of an inch and a half from the child's nose; in a very short time the convulsions had ceased; on a slight recurrence the handkerchief was again used, and with permanent benefit.

As an anæsthetic, chloroform acts on the afferent nerves, and produces the following effects:—

1st. Its stimulant stage, by its action on the grey matter of the brain; at the same time it acts on the medulla oblongata, the cardiac, respiratory, and moto-sensory centres.

2nd. Its depressant stage; the chloroform acting on the convolutions of the cerebrum, paralyzes them, the chloroform then finding its way into the grey matter of the spinal cord, acts in the same way on the nerve centres, and paralyzes the muscles. The snoring and noisy breathing is caused by the flabbiness of the muscles of the soft palate.

3rd, or depressant stage. The further depression of the medulla oblongata into paralysis, which means death.

The question has been often asked, why is chloroform used as an anæsthetic? Because it weakens the action of the heart, lungs, muscles, &c., but *not* until it has produced unconsciousness. Dr. Snow has calculated that about ℥m̄xij actually circulating in the blood of an adult at one time, produce the second degree of narcotism; xviiij the degree in which operations were performed, and little more than m̄xxx

suffice to arrest respiration, and mxxxvi to stop the action of the heart ; but it seems very certain that much less is requisite for producing full insensibility in some persons than in others. During its inhalation only 4 or 5 per cent. is inhaled, and more than 90 per cent. of air. Chloroform is prepared by the process of distillation from chlorinated lime rectified spirit of wine, slaked lime, sulphuric acid, chloride of calcium, and water.

ETHER.

Its History.—This liquid is said to have been known in the 13th century. In 1540 Valerius Cordus described the method of making it.

Therapeutics. Internally.—Ether is a valuable, speedy, and powerful agent in spasmodic and painful affections which are not dependent on local vascular excitement, but are accompanied by a pale cold skin, and a small feeble pulse. If administered during a paroxysm of spasmodic asthma it generally gives relief, but has no tendency to prevent the recurrence of attacks. In nervous headaches, unconnected with vascular excitement, it usually gives instant relief, but its employment would be contra-indicated during the excitement of the cerebral vessels, which may be known by the throbbing of the temporal arteries and suffusion of the eyes. It is given to relieve flatulence of the stomach ; also against seasickness, in fainting, some cases of poisoning, as conium and fungi, and in asphyxia.

Externally as a local anæsthetic it has been successfully employed in the form of spray, during the performance of such minor operations as the opening of abscesses, removal of small tumours, and the extraction of teeth ; producing insensibility of the part through the intense cold caused by its rapid evaporation.

As far back as 1815 an apparatus for giving ether vapour appeared in a Medical Dictionary, but 31 years elapsed before it was put into really successful use as an anæsthetic. It appears that Dr. Jackson and a Mr. Morton, of Boston, U.S., both claimed the honour of this practical discovery, Morton being connected professionally with Dr. Jackson. The idea seems to have been brought about by Pareira's "*Materia Medica*" giving an account of the value of the vapour of

ether, either pure or medicated, with conium as a remedy in asthma and whooping-cough, and that upon the faith of this Dr. Jackson actually inhaled some of the vapour himself. Being satisfied with its effect he made known the same to Morton, whose first operation was the extraction of a bicuspid tooth, one evening in September, 1846, while the patient was under its influence. Its reputation was soon established, and we learn of Mr. Liston employing it for amputation of the thigh and evulsion of the toe-nail, with extraordinary result. A few days later it was in the hands of Sir W. Fergusson, at King's College Hospital; and then in those of Mr. Skey, at Bartholomew's Hospital, where it was employed for every operation down to tooth-drawing. A mixture of ether and chloroform as an anæsthetic is used by order of the Government throughout Austria; and no death has been recorded, I believe, from its use in Vienna.

Ether as an anæsthetic does not prejudicially affect the medulla oblongata; consequently is ever so much safer as an anæsthetic than chloroform, as it causes no depression of the cardiac and respiratory centres.

When ether is taken by inhalative 70 per cent. is inhaled and only 30 per cent. of air is breathed, like chloroform, it is prepared by the process of distillation from rectified spirit of wine, sulphuric acid, chloride of calcium, slaked lime and water. The dose of pure ether is from $\mathfrak{mxx}$. to $\mathfrak{mlx}$. in water.

I ought to have stated before that ether stimulates instead of depressing the heart; hence there is less danger of cardiac syncope from its use, but chloroform is better for infants, old people, and women during parturition.

(To be continued.)

ABSTRACT OF PAPER ON CONGENITAL DOUBLE LOWER JAW IN A GIRL, AGED 14.

By Dr. WILLY MEYER.

(Concluded from p. 1062.)

The passage into the larynx is slanting—the soft palate well formed—the left tonsil on a slightly higher level than the right. On the whole the two sides of the head and face are sym-

metrical. The left cheek appears, however, a little flatter than the right; the left naso labial fold and left side of the mouth are drawn slightly upwards. In the substance of the lower lip on both sides of the frænum, more especially on the left, is a small blueish red flattened swelling, somewhat granular to the feel, which consist of enlarged mucous glands. The lower lip is otherwise well shaped and not too large. Almost in the middle line is a vertical cicatrix $2\frac{1}{2}$ centm. long, due to the former excision. External ear and auditory apparatus well formed. No abnormal appearance detected on otoscopic examination. Hearing, same both sides. Hyoid bone well developed and easily felt. Tongue freely movable placed somewhat obliquely to the left. Speech distinct. Nothing unusual to be found in any other part of the body.

Professor Trendelenburg removed the cushion of mucous membrane, and the canine slanting outwards, which turned out to be a permanent one.

That the case was really one of a rudimentary second lower jaw, was easily seen on comparing the plaster cast taken in 1878, with two jaw bones placed side by side. It was certainly not an exostosis carrying teeth. The pseudo jaw has a full row of teeth; the arch is not however quite regular, but displaced backwards and downwards. On either side of the tumour an alveolar process can be most distinctly felt, more especially to the inner side. The space within the arch is not hollowed out like the floor of the mouth, but filled up by osseous matter. No trace could be found of ascending rami. The want of development of the second jaw is to be ascribed to the constant pressure of the soft parts.

The plaster cast shows there has been some absorption of the alveoli and surrounding osseous substance since the removal of the four outer teeth. As a result of this absorption, the external portion of the tumour has in part disappeared. The enlargement descends abruptly with only a slightly perceptible swelling to remind one of the former condition.

Both jaws developed normally, with the exception of the left half of the lower one, during the period the patient was under observation.

An interesting point in the case, is the presence of the two canine teeth in the pseudo-jaw on her second admission.

With regard to the nature of the case, it must undoubtedly be looked upon as one of foetal malformation, a doubling of the lower jaw, or *polygnathy*, and so it was considered to be by Professor Ahlfeld. It is not a case of epignathy, because the tumour contains no vestige of any other portion of a foetus.

To what cause is this malformation to be attributed, and in what class is it to be included? Ahlfeld was disposed to rank it in the *diprosopus distomus*, a subclass of the *duplicitas anterior*. (Ahlfeld on Malformation).

In this way it would be possible to explain its formation, by assuming that there was a division of the foetus at its cervical extremity, but that it was altogether confined to the lower jaw.

It will be well, on account of the extreme rarity of the case, to mention another way in which it may have been brought about, and also to consider the views of the older authors on the subject.

Magitot compares it to the process by which the phenomenon of polymelia, or polydactylia, is produced, that is, by a cleaving of the maxillary process of the first branchial arch. But though this explanation seems at first to be a very plausible one, it cannot, we think, be taken as the correct one.

Polymelia is explained by the formation of tubercles. If this malformation were due to a similar cause, we ought to find an extra half jaw on one or other or both sides of the normal one.

According to Schenk, also, polydactylia is not produced by a system of cleaving, but it is an example of regressive progress. At an extremely early stage of foetal life there are traces of more than five digits. The larger number remains as the normal condition in the lower animals; but in man it is only met with quite exceptionally.

This malformation can be explained on well established laws of embryology. Thus, as is well known, some of the lower animals, such as the Ichthyopoida, possess as many as five branchial arches.

Why not assume that this second jaw was formed by a persistent portion of the third branchial arch, all but the middle part of which had disappeared? How it had managed to get

into its present position would be rather difficult to explain. On this assumption the malformation would date from the second half of the second month of fœtal life.

The theory would also satisfactorily explain Etienne Geoffroy St. Hilaire's case of a calf, in which there existed a double jaw, and also that of Israël, where a double left half of the lower jaw was found.

Though we are not able to give a satisfactory explanation of the cause of this monstrosity, we think the description should nevertheless prove of interest on account of its extreme rarity.

CIVILIZATION NOT THE CAUSE OF TOOTH DECAY.

By JOHN J. R. PATRICK, D.D.S., Belleville, Illinois.

(Continued from p. 1066.)

Among the epigrams of Martial, the Latin poet, who flourished in the first century of our era, I find the following reference to artificial teeth (such as they were), "You are not ashamed, Lælia, that you use teeth and hair which you have purchased ('fine bought teeth'). What will you do for an eye? That cannot be bought!" *

There is a disease of the bones known as rachitis, which is produced by a failure to secrete lime and magnesia, or, if secreted, not in sufficient quantity to give stability to the bones. This is a disease of childhood.

There is another disease of the bones called mollities ossium, in which the repair of the earthy matter of the bone is not equal to the waste. This is a disease of old age. Now, in either of these diseases whatever may be the primary cause, they are clearly due to a want of assimilation or defective nutrition, in which the calcium and magnesium taken into the body with the food, are not appropriated, but thrown off with the excreta of the body. It is, therefore, very clear that it would be useless to administer these salts in the hope of building up a wasting bony tissue, if these salts were found in abundance in the excretions of the body.†

* Dentibus atque comis, nec te pudet, uteris: Quid facies oculo, Lælia? —Non emitur. *Epigr. xxiii., Lib. xii.*

† Though phosphate of lime is always found in the urine of adults, this

Now, if calcium and magnesium were not found in the excretions of the body, these substances would, without a doubt, be indicated; but in administering these substances, or more properly, those foods which contain the largest proportion of the protein compounds, in which these earthy salts are locked up in a form suitable for appropriation by the animal economy, it could not be expected that they would go direct to any special bony tissue, much less to a series of organs like the teeth, the vitality of which is so far below the standard of other bony tissues.*

From these considerations how futile the effort must appear for individuals to elaborate theories derived in part from the whisperings of fancy and their own private practice, in support of the possibility of improving the condition of the teeth by a system of dietetics based simply upon what they see and unsupported by collateral knowledge. †

salt is not present in the urine of infants. The rapid formation of the bones, in the first periods of life, requires all the phosphoric salts contained in the food of the infant, and nature, ever provident, has devised accordingly, for the milk of all mammals is richer in these salts than any other kind of food. Is it not strange that the advocates of "feeding the teeth" should have selected wheat bran or graham flour, as the great regenerator of "degenerated teeth?"

* After a tooth has once attained its growth, there is no evidence that repair and waste continues as in other portions of the body by a process of intussusception. Secondary dentine or cementum may be deposited as in old age, or when a tooth becomes abraded, diseased, or fractured, but these kind of growths take place either internally (as in the pulp cavity) or externally (as in exostosis), and not from the inmost substance or parenchyma of the tooth, but upon the surface, internal or external, and partake more of the character of concretions than secretions.

† In an article entitled "Food for the Teeth," which I find in the "Dental Office and Laboratory," of April, 1882, the author states that he saves the teeth he extracts from day to day, and works them over for future use in the mouths of other individuals. (A system of robbing Peter in the hope of paying Paul.) He dissolves the teeth thus obtained in a proper menstruum, then precipitating the lime salts from the liquid he washes the precipitate and evaporates to dryness. The lime salts thus prepared, with the addition of syrup to make it palatable, he administers to his patients in proper doses. He further informs his readers that he feels satisfied from results plainly observable, that his patients have received invaluable benefit from such treatment. And thus we have presented to our view in the nineteenth century, a Dentist masquerading in the robes of a mediæval physician when *cornu ustum* was considered an infallible remedy in all diseases of the bones where earthy matter was supposed to be deficient.

Pilus canis suum morsum curat.

It will now be in order for some first-class thoroughbred theorist to propose a cure for Alopecia, by the judicious use of properly dessicated hair.

RÉSUMÉ.

As there is a wide spread belief among the medical as well as the Dental profession, that the teeth of a man degenerate in proportion as he advances from a savage to a civilized condition; and as the literature of our own profession, when treating of the causes of the decay of the teeth, invariably attributes it to "physical degeneracy consequent upon his artificial mode of living," it is certainly time that they who rely upon this hypothesis as an explanation of disease, be called upon to furnish not only opinions and inferences, but proofs of a conclusive character for their assertions.

Now, in order to facilitate the investigation, I will submit the following inquiries:

1st. Are people more subject to nervous diseases now than formerly? and if so, do such people suffer more from diseases of the teeth than those people who are not so afflicted? Man in a barbarous or uncivilized condition, acts upon impulse, whereas the civilized man reflects before he acts, for it is only by the exercise of this reflective quality in man that he becomes civilized, and the shortness and misery of savage life must be taken into account in making up statistics on this subject.*

2nd. Are diseases of the teeth more common now than formerly? Ancient and modern history, poetry, and old works on medicine, record diseases of the teeth, as well as supplying their loss by artificial means. Pre-historic skulls should be examined and tabulated; and to be of scientific value not a few, but many should be so treated; for if decay of teeth is found even in one skull out of one hundred, the fact would be established that the teeth of pre-historic man *were subject to decay*, and further examinations would establish the degree.

3rd. Are the majority of human teeth in the present age in a good or bad condition? We need statistics on this subject, for by far the largest number of people who visit a

* The savage is always in a starved or overfed condition; he has no commissariat in war or granaries in peace; badly clothed and wretchedly sheltered, a feast or a famine is his constant lot. The most miserable tramp that ever infested the confines of civilization fares sumptuously in comparison.

Dental office are the class who have bad teeth. They are driven there by necessity, and it takes a great advance in civilization for persons to consult a Dentist in regard to the condition of their own or their children's teeth, before they suffer pain or inconvenience. So that statistics in regard to the condition of the human teeth, based on what may be seen in a Dental office, are of little value, yet most that has been said on the increasing degeneracy of the human teeth has been compiled from the general impressions received by the Dentist in the practice of his profession through a series of years; and by careful observation and an increasing practice, he is forced to the conclusion that the human teeth are degenerating.*

I am well aware that a successful practice, coupled with close observation, is entitled to respectful consideration, as such, but for scientific purposes touching the degeneracy of the human teeth, an office practice is too limited a field of observation to be of value.

4th. Are the teeth of people living in the United States worse, or more disposed to decay, than the teeth of people living in Europe? It is a common belief that the American's teeth are worse than European's; and some of our profession, with an industry little short of tyranny, have done much by their writings to foster this belief. They have taken no pains to formulate tables, but collected their statistics from the babblings of home-sick servant girls, and the vapourings of recent emigrants who are hardly naturalized or acclimated before they are afflicted with an "American toothache."†

The same writers give to the American *Indian* a sound set of teeth ("because he lives in a state of nature,") and the

* In a conversation on this subject with a gentleman of excellent standing in the profession, I was asked the innocent question, "How is it, that when I commenced the practice of my profession some thirty years ago I had little to do, but my practice increased from year to year, until now I am overworked, and I find that it is the same with others in the profession?" He was too well satisfied with the explanation that degeneracy furnished, and to, modest to attribute his increase of practice to good work and an increasing professional reputation.

† See Essay on the "Cause of the Degeneracy of the Teeth," which appeared in one of the numbers of a small work entitled, "Half-hour Recreations in Popular Science," published by the house of Estis and Eauriat, of Boston, and written by a professor in one of our Dental colleges.

Mexican and South American were presumed to have good teeth, until the American Dentist appeared among them, then they commenced to have bad teeth. It is also stated that the number of Dentists in the United States shows a necessity for the Dentist that is not felt in Europe; well, the necessity may exist and not be felt, and the folly of this kind of reasoning will not be exaggerated by the following illustration:

A fellow being told that a certain gentleman took a bath twice a week, replied in astonishment, "Well now I had no idea that Mr. Jones was so dirty, for I do not find it necessary to take more than one in a year." There can be no doubt that the necessity for the use of soap existed many years before it was compounded, and by far the largest number of human beings now on the face of the earth do not realize the necessity of its use.

5th. Are the teeth of man more prone to decay than those of other animals? The comparative anatomy, arrangement, and development of the teeth of man and other animals will assist in furnishing the answer. The teeth of man are more prone to decay for the following reasons:—1st. The capsular form of the enamel (of the molars and premolars) leaving interstices between the cusps which form a ready lodgment for foreign matter. 2nd. The teeth of man are more compact, they form an unbroken arch, there is no interdental space between the premolars and canines as in other animals; and while the quadrumana resemble man in this particular, there is a marked distinction between the highest order of the quadrumanes and man. Owing to the greater length of the canines in the quadrumana there is an interval between the lateral incisors and the canines; with this exception the order of succession and arrangement of the deciduous and permanent teeth, as well as the earlier development of the teeth of the lower jaw, are the same as in man. The size of the teeth in human beings varies, and has no proportionate relation to the size of the body; thus, very frequently, small persons have very large teeth, while on the contrary, persons of colossal size may have narrow and small teeth. Large persons usually have large jaws; but the teeth do not correspond to the size of the jaws as often as the jaws correspond to the size of the body, either in large or small persons.

There are large jaws with small teeth, and small jaws with large teeth; the latter occurs more frequently in small persons, while the former is of rare occurrence in large persons. This irregularity of development of the teeth and jaws in relation to the body does not appear to exist in any other class of animals. For man forms but one genus, and while that genus is the only one of its order, it is divided into many species.

(To be continued.)

ADDRESS DELIVERED AT THE MEETING OF THE ODONTO-CHIRURGICAL SOCIETY OF SCOTLAND.

By the President, ANDREW WILSON, L.D.S.Ed.

THE First Ordinary Meeting of Session 1883-84 was held on Nov. 8th, at the Rooms, 30, Chambers Street—ANDREW WILSON, Esq., L.D.S.Ed. (President), in the chair.

The minutes of previous meeting having been read, were approved.

THE PRESIDENT moved that the hearty congratulations of the Society be given to Dr. John Smith on his election to the well-earned position of President of the Royal College of Surgeons, Edinburgh, and in doing so, said, that so far as he was aware, it was the first time that a Fellow in actual practice as a Dentist had received that honour, and it shewed that, highly as Dr. Smith was honoured and esteemed by his Dental brethren, he was quite as much so by his purely Medical ones. The proposal was agreed to unanimously, and the Secretary was instructed to forward an excerpt from the minutes of the meeting to Dr. Smith.

MR. MACLEOD (Vice-President), then said, that since their last meeting a most marked honour had been conferred upon their profession, through the person of Sir Edwin Saunders, whom Her Majesty had been graciously pleased to raise to the dignity of Knighthood, in recognition of the many eminent services he had rendered to the dental profession. He had much pleasure in moving that the Odonto-Chirurgical Society tender their sincere congratulations to Sir Edwin Saunders on

receiving this mark of royal favour, and to heartily wish Sir Edwin and Lady Saunders health and long life in the enjoyment of the title.

This was unanimously agreed to, and the Secretary instructed accordingly.

The PRESIDENT then delivered the following address:—

GENTLEMEN,—Permit me to thank you more formally than I did at our Annual Meeting, for the honour you conferred upon me, in electing me to the Presidentship of this Society.

While it is an honour I appreciate most highly, I cannot help having misgivings as to my ability to do it full justice, succeeding as I do, a gentleman of such varied talent as my official predecessor, not to speak of the many others who have so ably filled the chair. I only hope that with the assistance of the Office-Bearers and Council I may be enabled to hand over the affairs of this Society to my successor, uninjured by any shortcomings.

The Odonto-Chirurgical Society has now been in existence sixteen years, and I purpose, as an introduction to this present session, taking a review of the work performed by it, and seeing how far it has succeeded in advancing the objects for which it was formed.

These objects, as given in our constitution, are “the promotion and diffusion of knowledge in matters connected with Dental Surgery; the furtherance of communications on such subjects by members of the Society; and otherwise to advance the interests of Dental Surgery as a branch of Medicine.”

To these should have been added another, without which little or nothing could have been done to carry out this programme, namely, the promotion of intercourse among members of the Dental profession.

That the non insertion of this object, which receives its just prominence in the constitution of the sister society, the Odontological, was only an overlook, is evident, for if we refer to the remarks made by one of the founders of the Society (Mr. D. Hepburn), when proposing the “success of the Society,” at the Annual Dinner of the Licentiates in Dental Surgery in 1868, we find him saying,—“But apart, gentlemen, from those higher aims which only loom in the distant future

of this Society, our object at present is of a more humble and practical kind. By the institution of this Society we seek to promote that friendly feeling which ought to exist between the members of a liberal profession, and which hitherto has, I believe, only lacked opportunity to develop itself in this part of the kingdom."

These being its objects, we will now take a rapid retrospect, and see how far it has succeeded. In doing so, I will take first, as being in my opinion by far the most important, "the promotion of personal intercourse among the members of the profession in Scotland."

Let us look back on the condition of the Dental body here, at, or rather shortly before the foundation of this Society, and we may almost say there was scarcely a trace of friendly feeling. In place of it we had an amount of petty jealousy, which we can now barely realize. Modes of operating, materials used, nay, even the manipulations in the workroom, were guarded as rigidly as state secrets; in short, mutual suspicion reigned. If one Dentist knew personally one or two others, it was, I may say, exceptional, and even then the confidence professionally was rather limited. Contrast this state of matters with that which we have now, when the great majority of us are intimately acquainted, both socially and professionally. They are "wide as the poles asunder."

Now, while claiming for this Society the chief credit in bringing about this great change, I admit that the merit of initiating it is due to the Licentiates' Annual Dinner. Nay, more, I believe that but for it, the movement which led to the formation of this Society would not have been successful so soon or so easily. That social gathering was, so to speak, the little leaven that leavened the whole mass.

I well recollect how, at its first anniversary, I had, although a local practitioner of nearly twenty years' standing, to be introduced to most of those present. The frequent intercommunication which the Society has induced among its members, has even been of service in a field lying outside the action of the Society, as such, namely, that of dental politics, as I certainly believe that it exerted a powerful influence on the movement for dental reform which culminated in the Dental Act.

That the state of matters I have described as previously existing here, was no mere local peculiarity, but extended even to the metropolis, may be seen by referring to Mr. Heath's address, at the London Dental Hospital prize distribution in July of this year.

Turning now to the other part of its work, I find we have had fully forty papers read at our meetings, all, if I mistake not, with three or four exceptions, by our own members.

Besides these and the discussions on them, we have had special discussions on many subjects, as also demonstrations, or as our transatlantic brethren would say, clinics on points of manipulative Denistry, but these our time will only permit my naming in their order.

The work of the last two Sessions having been passed in review by the late President in his retiring address, I need not recapitulate, and so will limit my remarks to the work of the first fourteen years.

The subjects of the papers, etc., might be classified under four heads. 1. Operative Dentistry (including the Mechanical). 2. Dental Surgery and Pathology. 3. Dental Anatomy; and 4. Purely scientific; but as many of the papers go into more than one of these divisions, I will take them in chronological order, noticing their chief points.

My historical narrative, while serving the purpose I have in view, will at the same time point out to those members who may intend favouring us with papers, but who may not be familiar with the antiquarian literature of the Society, what subjects have already been brought before us, so that if they prefer "fresh fields and pastures new" they will see where not to look for them, while if otherwise inclined, the dates of the papers may point to subjects in which the accumulation of observations since the reading may have so modified opinions or practice that they are now open for re-consideration.

Our first paper, read March, 1868, we had from Mr. Williamson (Aberdeen), "Some of the Causes of Failure in Stoppings." This paper is limited to stoppings over *unexposed* pulps, and as causes of failure in the preparatory stage, non-removal of faulty or unsupported enamel; want of care in preparing the cervical margin in interstitial cavities, and not shaping the cavity so as to securely retain the filling, are given.

He advises the mopping out of the cavity, when fully prepared, with a saturated solution of sodium carbonate, and then with creosote. In the final stage, he notices the bad or even fatal consequences caused by the material used being allowed to pass beyond the edge (cervical) of the cavity, so setting up irritation in the mucous tissue, and to the filling of two adjacent cavities in separate teeth with one stopping. Curiously enough, we find what is entirely parallel, the attaching of artificial teeth to adjacent teeth by means of wire secured in these latter by stoppings, advocated by some of the greatest trans-atlantic stoppers.

He also notices, in conclusion, the necessity of keeping the cavity dry, and the great importance on the part of the patient of the teeth and stoppings being kept scrupulously clean.

Mr. Charles James Fox (London), gave a paper "On Nitrous Oxide," which is chiefly directed to the preparation of the gas, and to the when and how to operate, which, in the then novelty of the inhalation of the gas, were of some value.

In 1869, Mr. Ramsay, London, exhibited his "Method of Supplying Artificial Palates," which, besides being most instructive as regarded its main object, incidentally introduced the taking of plaster impressions, and the occasional advantage of employing a layer of velum rubber in cases where very much flattened by absorption.

Mr. Visick (then of Berwick), gave a demonstration with Nitrous Oxide, two operations being performed at the meeting.

Dr. Orphoot gave a paper "On the Occasional Subsequent Condition of Stopped Teeth," the condition being chronic periostitis, leading to more or less frequent alveolar abscesses, the treatment recommended being a modification of Hüllihen's operation or Risodontrophy, that is, drilling into the pulp cavity and leaving an open drain for the escape of any septic matter in the root or roots.

At the last meeting of this year, Dr. Thompson (Glasgow), gave "Notes of Practice," the subjects treated of being facial neuralgia or simulated tic-doloureux, filing *versus* stopping, and use and abuse of vulcanite. In the first, he strongly urged the necessity of thoroughly examining the state of the mouth and teeth, previous to any constitutional treatment. In the second, he gave his preference to filing in

the case of comparatively shallow interstitial cavities in the front of the mouth, and also strongly advised the removal of decayed first permanent molars, a little in advance of the eruption of the second, thus giving room for the wisdom teeth, and allowing a slight separation in those in front, in which case they might escape requiring either filling or filing.

In 1870, we have Mr. D. Hepburn on "Irregularities of the Teeth and their Treatment." Beginning with a review of the various theories as to the causes of such irregularities, he considered the treatment under two heads, surgical and mechanical, singly or conjointly, and gave his preference to the surgical wherever, by sacrificing one or two teeth, a cure could be effected without the use of any mechanical appliance. Noticing in passing, the increase of difficulty where the irregularity is hereditary, and the dangers of undertaking mechanical treatment where the teeth were fragile and predisposed to caries, he considered the question of age, giving the preference to from 12 to 16 years in ordinary cases. He concluded by showing a modified form of frame, which he called a "Clasp Frame," and explained his mode of applying it in a variety of cases. It combined firmness in the mouth, with the greatest ease in cleaning.

In the same year Mr. Campbell, Dundee, gave "Mechanical Dentistry, or How Best to Dispense with Spiral Springs." The greatest importance is given to the having plaster impressions; he recommends the use of a chamber in upper cases, and the more or less heavily weighting of under ones; he also refers favourably to the use of the Folsom ridge.

In 1871, we had "Remarks on Filling Teeth with Gold," from Dr. Hogue. Beginning with a review of the several modes of using soft gold, he takes up the use of adhesive, or as now called, cohesive gold, giving his preference to it, either as foil or sponge.

Perfect dryness being necessary for those forms, he exhibited a means of thoroughly excluding moisture during the operation in the application of Putman's rubber-dam.

"Notes on Amalgam Fillings," by myself, is chiefly occupied by a consideration of the causes which have led to the comparative failure of amalgam fillings, the principal being careless preparation of the cavity, and the want of homogeneity

in the stopping, which in very many, if not in most cases, merely consisted of particles of alloy cemented together by amalgam, a very different thing from a genuine amalgam, such as the copper, which, with all its drawbacks, was durable.

At the same meeting, Dr. Richardson, London, exhibited a specimen of a new anæsthetic (*hydramyl chlor*) he had recently introduced, and which from its peculiar properties he anticipated would be found advantageous to Dentists. He also showed them the form of inhaler best adapted to its use.

In 1872, Dr. Roberts, in his "Alveolar Hæmorrhage," gave details of the fatal case which occurred in his own practice in 1841, the bleeding in it having continued with more or less severity for 23 days.

In treating ordinary alveolar hæmorrhage he strongly recommended the use of Dr. Richardson's xilo-styptic ether, applied on lint, continued pressure being kept up, and condemned the employment of escharotics.

In "Some Observations on Salivary Calculus," by Dr. Robertson, Cupar Fife, the injurious effects produced by the deposit of tartar on the teeth are detailed, the great importance of its thorough removal strongly insisted on, and the use of *soft* steel instruments for that purpose advocated.

The following year we had three papers—Mr. Williamson, in "Some Notes on the Strength of Vulcanite," gives the details of numerous experiments with various rubbers, the conclusion arrived at being that under gradual strain, rubber properly vulcanised is very strong, while it is comparatively weak under shock or vibration. A light case would fall without harm, while a heavy one, or worse still, one loaded with a metal core, would be almost certain to break. Rubber clasps were objected to owing to their want of power to resist strain for any length of time.

In "Observations on the Diseases of the Mouth and Gums," Mr. W. Chisholm, noticing incidentally ordinary stomatitis and gangrenous stomatitis as not likely to come under dental practice, he takes up ulcerative stomatitis (for which chlorate of potash might be deemed a specific), general and local hypertrophy of the gums, and epuloid tumours, their nature and treatment.

(To be continued.)

British Journal of Dental Science.

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DENTAL EDUCATION IN ENGLAND.

It is said to be a wholesome thing to hear oneself abused, that even if the abuse may be unjust it is at least salutary, probing self-exaltation to its quick, it serves alike as a beacon against the shallows of self-sufficiency and the shoals of vain glory. But does the opposite hold good? Is it invariably a sop to the Ceberus which guards *amour-propre* when we coddle ourselves over the expressed good opinion which our neighbours flatteringly express about our ways and our results? It need not be. It should cause a vitalising current of pleasure to pulse through our frames and brace us to new enterprize and fresh work which shall be even more deserving of the good opinion of men.

Dr. Galippe, in reporting upon the training of our students, and our hospitals, assures us, and it is music to our ears, that these things contrast not at all unfavourably with the French system. And now, following hard upon Dr. Galippe's well-turned phrases, we receive an outspoken verdict passed upon us by our brethren "across the pond." The President of the American Dental Society of Europe takes occasion to remark, that while English students are skilful operators they are also careful readers. He says, "I have myself passed seven different medical examinations. The easiest of these was that for M.D. of the University of New York. My subsequent examination for D.D.S., at the Philadelphia Dental College, amounted to absolutely nothing; and I am convinced that the English system of education, combining as it does, thoroughness both in theory and practice, must in the long run triumph over the American system." Dulcid as are these strains and fruitful of pleasant reflections, yet they should, we opine, act less as a Lotus-song and more as a *reveille*. We must ask ourselves whether if our system

is superior to others, is it due to our sufficiency or the deficiency found elsewhere? While we must guard ourselves carefully against casting a slur upon the work of American Dentists, who undoubtedly maintain in Dentistry as elsewhere, the true gift of transatlantic *génie*—deftness and invention, we cannot but see, although with regret, that their instruction-methods are meagre. You never enter any tutorial clinic of Europe or the British Isles without finding it flooded with Americans. They—the very pink of honesty and candour—confess their home clinics attempt too much, lack centralisation, and last, but not least, do not allow time in their curricula. And in spite of this, many of our leading men hail from transatlantic homes. So we may perhaps turn with advantage to our own beam and try to cast it out, for we are far from perfect; our system, we say it advisedly, is not the system many of us would care to see set up as an example upon which even the intelligent New Zealander of the 21st century might smile.

We have, undoubtedly, mended matters vastly, but there exist evils in the profession which rankle, and mar its claims to be classed as “one of the learned professions.” “Then,” the reader will exclaim, “are such men as Goodsir, Tomes, and the many undoubted scientists who adorn our profession, to be denied in England that title with which the world endows them?” No, surely not; but since as a profession, and we must include suttlers and camp followers in this array of the Dental army, it cannot be denied that the world of science does not esteem us very highly. While it singles out names it is pleased to pass by the ruck with a smile akin to pity if not of condescension. Whether this is just, our readers will answer. For our part we believe such reputation is to a certain extent the heirloom of a bygone age, when if surgeons used a pole and wielded a razor, we are afraid to say what Dentists laid hands upon. We have heard, and not so long since, of that weapon termed a key, and if we remember aright its name was not coupled with gyves or a thumb-screw!

Let us set ourselves to learn how we can make our profession more in reputation in the Parnassian heights of science, and let us recognise that we must be scientists before we are Dentists.

One often hears it gravely questioned whether a man had

better not be "only a Dentist," which we presume means let him be as little of a Dentist as will enable him to thrive—too much learning is a mistake, quotha,—but about too little? Why teach chemistry, physiology, zoology, when you want to make a lad handy and the master of his Dental machine, his fillings and his Dental Pharmacopœia? Our answer is, were it to be shown (and such a contention must always drop before just criticism) that these subjects have no connection with the work of his life, they are essential, for they will make him think, and, if they be taught fairly they will equip him with the *philosophic method* which will prove throughout his whole career a source of wealth, intellectual and manual, such as will reclaim him from slovenly work, undigested crude observation, or, worse still, none at all. A man with scientific method differs from a man to whom knowledge "has growed," as did Topsy, as much as a Newton differs from the Somersetshire yokel who shakes apples from the trees in his mother's orchards. And we believe it is the lack of this scientific method among a large section of those who practice Dental Surgery, which tends to lower the repute of the profession at large.

Those who as leaders in the forefront of the ranks of our profession, have shown the world and us what the scientific mind can do, should act as a spur to the hinder squadrons, inciting to emulation and imitation. That such men live and have won their wreaths of parsley should make us not only more sorry that there exist among us men whose aims are sordid, whose pretensions are the anticlimax of science, and whose status in society is virtually that of an unskilled retail dealer. To attain prestige we must have two guiding ideas: the one that it is expedient for us that scientific method be our watchword, and the other that at present there do exist many sad blemishes in our ranks. We feel assured that to remove the last we must pursue the first. As we quoted above, "thoroughness, both in theory and practice, must in the long run triumph."

Still we see there exists a painful inertness among a large section. The old cry that, "what things were good enough for our fathers should surely serve our turn," crops up again and again. We are told that young men have quite enough

to do in the workshops of practical men, and are none the better for having their heads crammed with pathology. What does the British public care about the pathogenesis of dental caries, of syphilitic degeneration of the dental matrix? And yet, no more fatal misstatements can be made. The public may not enter very keenly into purely technical discussions, but it does regard as of vital import the outcome of such discussion, and further, it will surely appreciate the labours of of those men who toil for its welfare and aim at the halcyon time when prevention shall supersede cure.

It yet remains to enquire whether our modes of instruction are such as should turn out Dental Surgeons possessing the philosophic mind conjoined with the adept hand. Nor must we narrow the issue to mere novitiate instruction—to our mind when the student life ends the true education begins. We have mastered our A B C, we are furnished with other men's opinions, recipes and experience, but all this is but preparatory to our *personal work*. The methods for this life education must be considered later on. They must be, as a matter of course, widely different from those of students; the large demands made upon the time of practitioners necessitate this diversity. Societies, journals and associations form the basis of the present system, and it will be our business to include these under the heading of Dental education, to enquire whether they fulfil the object of their creation and subserve the best interests of the profession at large. We propose to indicate that to the individual rather than to the indefinite every-body, our remarks are addressed; for no matter how busy men may be, there is always time if, and we insist upon this point, the true method be present.

How easy to sneer, "the schoolmaster's abroad!" and yet how difficult in a profession like ours, consisting of the most *bizarre* elements, is it to convince that the ministrations of that worthy pedagogue are not required or are superfluous.

THE extraction of teeth is, in the vast majority of cases, such a very simple, trifling operation, so easily performed, and usually attended by such a slight amount of inconvenience to the patient, that we hardly seem to realize the possi-

bility of its ever being attended by a fatal result. In operations about the mouth, as well as in any other part of the body, we are always prepared for the possibility of free hæmorrhage, and we know that we may at any time meet with a subject of that mysterious affection, hæmophilia, or hæmorrhagic diathesis, in which all our efforts to stop the bleeding may prove unavailing, though these cases are infinitely rare. But that all, healthy and weak, we should be liable to die from septic poisoning after the extraction of a tooth, is a matter that may well set us pondering.

These thoughts are suggested by the perusal of a paper by Sacharewitsch (Wratsch, 1882), in which he relates two fatal cases of blood poisoning after the extraction of teeth, both of which occurred in strong, healthy men.

But when we come to consider the matter, ought we not rather to marvel that we so seldom meet with these cases; for what better *nidus* could we desire for the development of any of these low forms of septic organisms, bacteria, micrococci, &c., than the cavity of the mouth, with its warm, moist atmosphere—in many of these cases with its existing purulent foci, either superficial or even in the depth of the bone, ready centres for the dissemination of infection, and added to these the general febrile condition of the body. That these dangers are ever amongst us few would venture to deny, and in the presence of these facts, living as we do at a time when the principal aim of surgery and medicine seems to be the prevention of disease, may we not look forward to the day when it will be said to Dentists, as it already is to Surgeons in some countries, that it should be a punishable offence not to secure a patient against all risks of septic poisoning by the use of Listerian precautions, or, some form at least, of antiseptic treatment.

Such would appear to be the view held by Sacharewitsch, for, evidently deeply impressed with his experience, he concludes his paper by making a strong appeal to his readers, in which we would also join, never to omit precautionary antiseptic measures, both before and after all operations about the mouth.

Amongst these we would include, what we fear in these days of nickel-plated showy instruments, is a point scarcely

sufficiently attended to, we mean the thorough disinfection, not merely the washing of every instrument, as well as that of the operator's hands, after every operation.

In conclusion, we would remind our readers that the mere extraction of a tooth means the causation of an excavated anfractuous wound, with lacerated and, in most cases, inflamed walls; a wound by its very shape most prone to retain particles of septic matter, and one which by no possible means can be brought to heal by first intention, and we would ask: Which of you having to treat a wound of this kind in any other part of the body, would dare trust to dirty dressings or to no dressings at all? And yet this is what occurs in by far the largest number of cases of extraction of teeth.

At the meeting of the Pathological Society, on Tuesday, Nov. 6th, Mr. Waren Tay exhibited a lad, aged 16 (nearly), from whom, ten years previously, he had removed the whole of the lower jaw (except right condyle) for necrosis. The case is recorded in vol. xxv. of the Transactions of the Society, with a woodcut showing the amount of bone removed. Mr. Tay reminded the Society that the boy, then five years old, had been admitted into the North Eastern Hospital for Children, under the care of Dr. Cayley, Feb. 4th, 1873. The symptoms at first suggested the diagnosis of typhoid fever, but this was not confirmed. Ulceration of the gums set in, quickly exposing the jaw, but the mucous membrane of the cheek was never affected. After some five or six months a ridge of new bone could be felt forming beneath the old jaw. When this was deemed fairly firm, it was thought advisable to remove the necrosed jaw. Accordingly, on September 23rd, the bone was divided with bone forceps as far back on either side as convenient, and the front portion removed. Then the remaining portions on either side were easily twisted out. It was found that the whole of the lower jaw had come away except the right condyle. The new bone increased in size and firmness, and there was evidently free motion on either side. Having now the opportunity of showing the lad at the end of ten years, Mr. Tay thought it was advisable to do so, as it was but seldom we were able to watch such cases. There is a

perfectly useful, firm, and fairly developed jaw, though decidedly receding at the chin. The new bone measures from half to three-quarters of an inch in vertical height at the symphysis. He can elevate and depress vigorously. On the left side, where the condyle was removed, there is good lateral motion, and on this side he can crack a nut. Just in front of the coronoid process there is a tooth making its appearance. The lad has noticed it about six weeks. The second molar (as the specimen contained the first), or the wisdom tooth? Of course all the periosteum and soft structures around were undisturbed in the removal of the bone. On the right side the movements are more limited. He finds no difficulty in chewing his food. Mr. Tay alluded to the case of reproduction of the lower jaw, recorded by Mr. Savory in the "Med. Chir. Trans.," vol. lvii. The patient died at too early a period to test the permanence of the new jaw. In Mr. Salter's article in "Holmes' System of Surgery," two cases are quoted, seen by Dr. Bristowe at the end of six and nine years respectively, after removal of the whole of the lower jaw for phosphorus necrosis. In each case the jaw was thoroughly useful. The only cause to be assigned for the necrosis, in Mr. Tay's case, was the possibility of phosphorus necrosis from the boy's asserted habit of sucking the heads of lucifer matches. Such a supposition obtains support from a case recorded by Mr. Simon, in which a man became the subject of phosphorus necrosis, after adopting the habit of sucking a piece of ginger, which he commonly carried in his waistcoat pocket, in contact with a quantity of loose matches. The parents of the lad denied any history of any antecedent exanthem, &c.

At the annual dinner of the Royal College of Surgeons, Edinburgh, on the 16th ultimo, the connection of the Dental with the Medical profession was recognised by the College. Mr. Wilson, the President of the Odonto-Chirurgical Society, having been *ex officio* one of the guests.

HYPEROSMIC ACID IN NEURALGIA.—Billroth has recently been using a 1 per cent. solution of this acid in the treatment of sciatica. Some very chronic and obstinate cases are re-

ported to have yielded completely to it. It is employed as a subcutaneous injection. At present, we believe, resort has not been had to this drug in facial or dental neuralgia. Its very marked success in sciatica would seem to warrant its trial in kindred cases coming under the care of Dentists.

MISPLACED TEETH.—At a recent meeting of the Medical Society of London, Dr. de Havilland Hall read the notes of a very interesting case of malposition of a tooth. Dr. Hall stated that the tooth was found in the right nostril. It was a permanent canine, and was extracted some three months after its first discovery. The patient, a girl aged 15 years, was the subject of congenital syphilis, her septum nasi was perforated, and she had ozæna from both nostrils. Mr. Sewill believed the ozæna was not caused by the misplaced tooth; such misplacements, he avers, cause no inflammation. Another curious “freak of nature” is reported in the “Lancet” by a native doctor. Nogendra, a Hindoo aged about 14 years, presented himself at the Sooree Dispensary complaining of a “tumour” growing in his nasal cavity. He had suffered from fœtor of breath with bloody discharge from his left nostril, for four months. For two months a growth had been observed to occupy the left cavity, where it seemed to be attached to its wall at its upper part, its free end was looking downwards in the shape of a truncated cone. Dr. Chunder Roy avulsed the “tumour,” which proved to be a canine tooth. Curiously enough the lad possessed his complement of teeth in his jaws, and these were free from all abnormality. We are glad to see the tooth has been sent to the museum of the College of Surgeons. We hope Dr. Havilland Hall will follow Dr. Chunder Roy’s example, and send his specimen there also.

FRESH SOURCE OF CAOUTCHOUC.—The “Zahntechnische Reform,” understands that the Indian Government have had their attention called to a plant called *Prameria Glandulifera*, as a possible source for the ever-increasing demand for caoutchouc. This plant is very plentiful in Southern India, having been transplanted there from Cochin China, where it is indigenous. The blackened bark and twigs are employed medi-

nally in China, but for what purpose does not transpire. After preparation the bark costs about twenty shillings for 123 lbs. On section these twigs reveal a quantity of caoutchouc in their interior. Like the variety obtained from East Africa, it is capable of being drawn out into long threads. It is thought that it will be possible to cultivate these plants in plantations as they appear capable of propagation by cuttings.

DENTAL ACADEMY FOR BERLIN.—We are informed that the Germans have determined upon forming a Dental Academy in Berlin, and are only waiting State sanction before the plan becomes an actual fact. Commenting upon the absence of such an institution, a German writer upholds his "Fatherland" as being in no way behind the age in Dentistry. America is declared to have reaped a rich harvest from her dental colleges, and dental degrees, and hence the "Fatherland" should not be behind in these matters. One is prompted to ask "What's in a name?" when we are told that some "doctors" in Dental Science are exempted from all provisional test in "Humanities," and even in professional work need only attend a very brief curriculum. Surely less depends upon the "label," and more upon the "material."

HOW TO CURE TOOTHACHE IN A MINUTE!—The following "bright ideas" have occurred to a "Practical Dentist" of Cologne, according to the "Zahntechnische Reform." Dip a plugget of cotton wool in oil of cloves, and if the tooth is hollow press the plugget well into the cavity. This, we believe, is a more elegant form of the household remedy, "bite a clove;" a remedy not unknown to many of us in our milk-teeth days. The same authority then suggests, that failing the oil of cloves, the gum about the obnoxious member should be well painted by a camel's hair brush, which has been dipped in tincture of iodine. The mouth should be well rinsed with warm water and resort again be had to the iodine, and so on until the gum is well coated.

As a useful hint we may add, that if this painting be done "not wisely but too well," and the gum be made very painful, that the best way of removing iodine, which is rather insolu-

ble, is either iodide of potassium, eau-de-Cologne, or whiskey. One or other is sure to be at hand.

THE London "Medical Record" recommends chlorinated lime, camphor, and glycerine as an antiseptic, and of use whenever carbolic acid is usually employed. It can be tinted with compound tincture of lavender or cochineal.

Apropos of disinfectants, another death has occurred "from misadventure *and* carbolic poison" (the italics are ours). The unhappy victim was an inmate in Monsall Hospital, Newton Heath, and the potion was administered by a "probationer." It is noticeable that melancholy as these mistakes are, and liable to occur to any of us who keep, as we all do, deadly poisons about the place, yet it is not the function of a crowner's quest to add riders administering praise or blame to their "finding." If the press were systematically to suppress the opinion of these gentry it would be best.

TWO MORE DEATHS FROM CHLOROFORM.—We hope before long to analyse these frequent additions to the death-rate, and discuss the advisability of making radical changes in our methods of administering anæsthetics; meanwhile we may mention, that one death occurred on Nov. 2nd, at the Seaman's Hospital, and the other at St. Thomas's Hospital. Clearly all due care was taken as far as our lights at present go. The first case was that of a man aged 28, about to be cut for urethral stricture, and the other was a man of 47 years, and the operation was about the anus. It is noteworthy that both patients had had ether administered to them upon previous occasions, "*but had taken it badly*," hence the employment of chloroform.

FALSE TEETH OF MOTHER OF PEARL.—In the South Sea Islands mother of pearl is largely used for manufacturing false teeth. The fixing is accomplished in a very simple manner, and but few instruments are called into requisition. When the tooth is prepared, the operator incises the gum in the desired position, cutting well down to the bone. The mother of pearl tooth is then forced into the cut and made to

rest upon the bone; a temporary prop of bamboo is then employed to ensure the adhesion of the gum and the process is complete. During the healing period the patient is fed solely upon fluid food.

ALUM BAD FOR THE TEETH.—In the “*Revue de Therapeutique*,” a case is cited which shows how very detrimental alum is to the teeth. The patient was a woman, and was employing a weak solution of alum as a mouth gargle. She continued its use for several weeks. At this stage she found all her teeth snapping off, and so consulted a Dentist. Upon examination he found the teeth were almost entirely de-enamelled, a result it appears, attributable to the alum gargle. Borax, or chlorate of potash, form far more efficient and safer mouth-washes, and should always be used in the place of alum.

CREATION OF A CHAIR OF DENTAL SURGEON.—We are pleased to be able to announce that a new professorship has been instituted at the Royal College of Surgeons in Ireland. The holder is to be called the Professor of Dental Surgery. The election was announced for the 29th inst.

WE hear a rumour that there is a proposal afoot to form a Dental Society for the Midland Counties on the basis of the Odontological Society of Great Britain; and we heartily trust that it is a fact, and that it may be immediately inaugurated and successful. There is room for several such Societies where the members of each neighbourhood may have the opportunity of frequently meeting and exchanging ideas, for unquestionably the more opportunities there exist for such free and pleasant intercourse the greater the benefit will accrue for both the profession and the public. We are glad also to infer that this proposal would already have been brought forward, but that the good taste of its promoters suggested deferring it until after the Annual Meeting of the Midland Branch of the British Dental Association had taken place, for fear it should in anywise interfere, or even be thought to interfere, with its success. If this be the outcome of the Odontological Society's recent new rule of seclusion, it

may be by no means one of the least of the many most important benefits that have emanated from that fruitful source, albeit an unintentional and unexpected one.

Manipulative Miscellany.

All instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month; they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits, and without any intention or wish to put one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

MR. A. G. HOCKLEY'S MASTIC BOTTLE.

MESSRS. ASH AND SONS have a new bottle for mastic or sandrach cement, of an exceedingly convenient form, designed by Mr. A. G. Hockley. It is a heavy glass bottle with a broad base and large neck, being but 1½ in. high, enabling the cement to be used without much chance of smearing the neck of the bottle. But to make sure doubly certain, it is fitted with an elastic india-rubber stopper with a hard vulcanite handle. This stopper is the most ingenious part of the whole, having all round its sides a delicate, raised, diamond pattern of rubber, which yields to the least force, so that on inserting the stopper the slightest pressure ensures its being air-tight, whilst should it adhere to any mastic, its elastic nature will enable it to be readily removed notwithstanding.

Literary Notices and Selections.

THE ORIGIN AND GROWTH OF TEETH.

By SALLIE STRASBURG, Cincinnati, O.

(Concluded from p. 1089.)

The cord of the secondary follicle in its descent always assumes a spiral form, resembling the duct of a sudorific gland,

in the epidermis. This special arrangement is so marked a characteristic of the secondary cord that it may at once be distinguished from the primitive cord; for, though the latter describes some sinuosities it is never so distinctly spiral as the former. The reason of this greater spirality in the cord of the permanent follicle, is from the fact that it must traverse the more developed tissue of the jaw, to a greater distance, to reach the follicle in its passage to a point below that of the temporary tooth, without straining the cord, or disturbing the parts to which its two ends are attached. This spiral arrangement is particularly noticeable near its point of origin, but toward the terminal extremity diminishes and finally disappears, giving rise to a rounded enlargement exactly like that found at the extremity of the primitive cord, which represents the enamel organ of the permanent tooth.

When the new follicle has arrived at the stage of development, when the bulb becomes unicuspid for the canines and incisors, and multicuspid for the molars, the epithelial cord, which has, for some time, been severed from the primitive cord, becomes in its turn ruptured. From this period the secondary and primitive follicles are isolated from all connection with the epithelial lamina, during their subsequent evolution.

This is the mode of genesis of the follicles of the permanent teeth that are preceded by temporary ones; but the origin of the first teeth that appear behind the deciduous set is entirely different from that of the anterior permanent teeth. The first permanent molar, which becomes considerably developed in foetal life, is derived from an epithelial cord which originates directly from the epithelial lamina.

The second permanent tooth originates similar to the twenty anterior permanent teeth, from a diverticulum or outgrowth of the cord of the follicle of the first molar, but they differ in the direction of their course, while those derived from the temporary follicles pass over the lingual face of the temporary follicles to a point beneath them, that of the second molar takes a horizontal course for some distance, then, by an inflection, takes its position at the posterior side of the follicle of the first molar, where it is developed in a line with those anterior to it.

The origin of the third molar, or wisdom tooth, is effected in a similar manner to that of the secondary molar, the cord that produces its follicle emanates from the cord of the second molar.

It seems there has been more difficulty in ascertaining the origin of this tooth than that of any other, owing to its position and alteration of the tissues of the jaws after they have acquired considerable size and hardness.

And yet Legros and Magitot have been enabled to determine with certainty its origin. The mode of genesis is the one I have just described. According to these observers the cord for the first molar originates from the epithelial lamina, it becomes the medium by which the follicles of the succeeding molars are derived.

All the evolutionary phenomena are the same to whatever dentition they may belong, but the order in which their evolution is accomplished varies according to the nature of the temporary or the permanent character of the future teeth.—*Ohio State Journal.*

Dental News.

TRANSACTIONS OF THE STUDENTS' SOCIETY OF THE DENTAL HOSPITAL OF LONDON.

ORDINARY GENERAL MEETING, HELD MONDAY, NOV. 12TH, 1883,
AT 7 P.M.

STORER BENNETT, Esq., President, in the Chair.

THE minutes of the previous meeting were read and confirmed.

The following gentlemen were unanimously elected members of the Society: Messrs. Winterbottom, C. Rilot, J. P. Smith, C. Barstow, A. L. Goadby, G. Collett, F. Omeara, L. Jeffery, R. May, G. O. Richards, and H. Murray.

Messrs. S. W. Read and I. S. Acton were proposed as members of the Society.

The PRESIDENT then called on Mr. Stainer for the paper

of the evening, on "Materia Medica," which was carefully arranged and explained. (See p. 1104.)

This was followed by a good discussion which was opened by the President, and continued by Messrs. Hern, Pedley, Richards, and Omeara.

After Mr. Stainer had replied the President thanked him, in the name of the Society, for his paper, and the meeting then dissolved.

FORMATION OF A NEW BRANCH OF THE BRITISH DENTAL ASSOCIATION IN SCOTLAND.

At a meeting of the Society of Dental Licentiates of Glasgow, held on the evening of the 14th of November, it was resolved that the Society should merge into the British Dental Association under the title of the "West of Scotland Branch."

BRITISH DENTAL ASSOCIATION—MIDLAND BRANCH.

THE arrangements for an Extraordinary Meeting of members and friends, in Birmingham, on Saturday Dec. 8th, are rapidly being completed. There is every assurance of a numerous and highly successful assembly.

C. Spence Bate, F.R.S., President of the British Dental Association; J. Smith Turner, M.R.C.S., Vice-President; and F. Canton, Esq., Secretary, have kindly promised to attend.

Roff King, Esq., President of the Branch, will take the chair at the dinner in the evening.

Gentlemen desirous of becoming members, should apply to the Secretary.

W. H. WAITE, 10, *Oxford St., Liverpool.*

VACANCY.

DENTAL HOSPITAL OF LONDON, Leicester Square.—The post of Dental Surgeon to the above Institution is vacant. Candidates must be Licentiates of Dental Surgery. Applications, accompanied by testimonials, on or before Monday, Dec. 10th, to the Committee of the Dental Hospital of London, Leicester Square.

Correspondence.

[We do not hold ourselves responsible for the opinions expressed by our Correspondents.]

To the Editor of the "British Journal of Dental Science."

SIR,—In the Dublin Directory there is the name of an advertising Dentist with the letters L.D.S. after it. Now, Mr. Editor, believing such to be an injustice to every respectable Dentist, and intended to delude the public, I beg, through the medium of your journal, to call attention to this unprofessional conduct, and ask how to prevent its being repeated? in the hope that the powers that should will do so.

Yours, &c.,

FAIR PLAY.

To the Editor of the "British Journal of Dental Science."

DEAR SIR,—Last month I sent you a notice from our Committee of Invitation, announcing a meeting of the Midland Counties Branch of the British Dental Association at Birmingham, on Dec. 8th, 1883, and signed myself as Secretary of the Midland Branch, instead of Secretary to the "Invitation Committee," a mistake that I should have thought every member of the British Dental Association would have seen at once; it was a slip of the pen, the notice was hurriedly written, to catch the post, and we had been talking of the British Dental Association all the evening. I very much regret the mistake, as it has excited strong feelings, one gentleman even lecturing me about "tampering with the Constitution,"—the British Dental Association being incorporated by Act of Parliament—which frightened me very much, anticipating a writ, or at least a subpoena, and in the end, 15 years penal servitude, that being the reward given to some Birmingham gentlemen for writing their names in the wrong places; so do please let me say that I am *not* the Secretary of the "*Midland Branch*," or any other "*Branch*," neither am I now Secretary to our Invitation Committee, this affair having made such a stir, that I felt compelled to resign.

Yours truly, T. DIXON MILLER.

98, Newhall Street, Birmingham,
Nov. 15th, 1883.

To the Editor of the "British Journal of Dental Science."

Sir,—In answer to "Steatite," Yes! Dilute your silex and apply *only* before drying the models. G. B.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 82, Mortimer Street, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
3. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
4. All communications relative to subscriptions and advertisements are to be addressed to the Publisher, Mr. J. P. Segg, 82, Mortimer Street, Regent Street, London, W.
5. The Journal will be supplied direct from the office on PREPAYMENT of subscriptions as under:

Twelve Months (post free) 14s. 0d.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skliros, 82, Mortimer Street, Regent Street, W. A single number sent on receipt of seven (penny) stamps.

ANSWER TO CORRESPONDENT.

"Fair Play."—The matter should be brought to the notice of the Medical Council and the British Dental Association by someone locally concerned.

BOOKS AND PAPERS RECEIVED.

"Centralblatt für Zahnheilkunde," Spezial—"Katalog des Deutschen Zahnkünstler," "Zahntechnische Reform," "Monatsschrift des Vereins Deutscher Zahnkünstler," "Dental News," Knightstorn, Indiana, "Progrès Dentaire," "Ohio State Journal," "British Medical Journal," "Lancet."

NOTICE.—We desire that it may be clearly understood that our pages are open to all for free expression of their views on matters connected with our profession. We only ask for terseness of expression and MODERATION IN TONE.

When otherwise unobjectionable, difference of political or other opinion will never be regarded by the Editor as a disqualification for the admission of any communication to the pages of the BRITISH JOURNAL OF DENTAL SCIENCE.

British Journal of Dental Science.

No. 382. LONDON, DECEMBER 15, 1883. Vol. XXVI.

THE EXPERIMENTAL STUDY OF ANÆSTHETICS.—II.

By DUDLEY W. BUXTON, M.D., B.S.Lond.

PAUL BERT'S METHODS AND RECENT INVESTIGATIONS.

IN America many attempts have been made to produce a prolonged anæsthesia by means of nitrous oxide. In these cases, however, the methods pursued were finally abandoned as impracticable. To effect the desired end, nitrous oxide was pushed to the bounds almost of asphyxia, the mask and face-piece was then removed, and air admitted to the patient. After a brief interval the face-piece was again applied, to be again withdrawn as asphyxia supervened. In practice, this manœuvre was found not only dangerous, but highly inconvenient to the operator, and upon these grounds it fell into disrepute.

This method was also adopted for a time in France, and was used by Rottenstein and some French surgeons, but as in America, so in France, the dangers and difficulties finally compelled its discontinuance. To overcome the danger, which so near an approach to asphyxiation entailed, Paul Bert determined to dilute the nitrous oxide with pure oxygen, with the idea of effecting a complete aëration of the blood at the same time that he produced narcosis by the nitrous oxide. Not only was the nitrous oxide diluted by oxygen, but various indifferent gases were employed with the same object in view. The results obtained from these trials were, however, very unsatisfactory. In the first place, the degree of anæsthesia obtained was far short of total loss of sensation, while the patients were so restless, violent, and unmanageable, as to render operation absolutely impracticable. Such failures led Paul Bert to determine to use pure nitrous oxide, and so his future experiments took a new departure.

We may premise that the tension of oxygen in the residual air of the lungs is higher than the oxygen tension in the blood; that although some oxygen exists in simple solution in the blood, yet the bulk of it is present, loosely associated with

hæmoglobin; that, further, it is the excess of oxygen pressure in the residual air which promotes the exchange of oxygen from the air to the blood, but the inverse tension of carbonic dioxide which exists promotes an inverse exchange of carbonic dioxide between the blood and the air. What, then was desired to be accomplished, was to maintain the normal oxygen pressure in the blood, but also introduce enough nitrous oxide to produce a complete narcosis—not to replace the oxygen, but to superadd a narcotising or anæsthetic agent. To accomplish this, it was determined to employ higher tensions of gases, to remove, as it were, the organism from the normal atmosphere, and place it in one whose barometric scale should indicate a double or trebled atmospheric pressure.

It may not be superfluous if we offer a digression at this point, and consider the much vexed question of the physiological action of nitrous oxide.

At one time the entrance of this gas into the blood was held to be due to diffusion, it replaced oxygen, we were told, and so was conveyed to the tissues. Hermann, in his elaborate researches upon this point, showed, however, that nitrous oxide did not as was held, undergo any decomposition in the blood, nor was it in any way capable of ousting oxygen from its place. Jurgensen demonstrated further, that the co-efficient of absorption which liquor sanguinis, since the corpuscles are quite inactive in the matter—has for nitrous oxide is about the same as that possessed by distilled water.

It must be evident then, that, at least as far as the functions of respiration go, this gas acts really indifferently, and that it exists in the blood, in obedience to the law of Dalton.

Having arrived so far, we have to pause, for at present we are quite unable to explain the action which nitrous oxide has upon the central nervous system.

Ringer states that, in his belief, the anæsthetic effects are produced by non-oxidation of the nerve centres from their deprivation of available oxygen. Whatever the effect is, it must be exceedingly transient, since a few mouthfuls of pure air are usually enough to restore all nervous function.

We will leave this subject for the present as enough is indicated above to make Bert's further proceedings clear.

While experimenting upon pressure, he found that increased atmospheric pressure killed bacteria, ferments, &c., i.e., the lower protoplasmic forms of life. It was also pointed out by other observers that with the increase of atmospheric pressure no corresponding increase of oxygen in the blood occurred, at least after a certain point, a fact which we shall see directly has an important bearing on the matter before us.

Also it was noticed that the elimination of carbonic dioxide was lessened at these high pressures. These phenomena resulted in the production of a more or less profound narcosis.

It will be remembered that it was only recently suggested that violent and prolonged respiratory efforts produced an apnœal state which was accompanied by anæsthesia. Whether this be a vascular phenomenon or is more akin to an increased pressure state may for the present be passed over.

Having then proved that it is essential to employ the nitrous oxide pure, Bert concluded that its tension must equal that of the atmosphere if it were to gain access to the organism in sufficient quantity. Now, under the ordinary atmospheric pressure to obtain our end, we must have the gas in the proportion of cent. per cent. So that we are advanced another step: for if we now surround our patient with a pressure of two atmospheres, it is clear we have only to employ a mixture of 50 per cent. nitrous oxide and 50 per cent. air, we ought, so Bert theorised, to obtain a species of anæsthesia free from struggles, while we maintain alike the oxygen tension in the blood and the normal function of respiration.

Working upon these lines it was found that when animals were submitted to such an increase in pressure and nitrous oxide administered, they rapidly became profoundly anæsthetic, and remained in this state without evincing the least sign of asphyxiation. The blood did not become discoloured and the heart beat softly, regularly, and without any perturbation.

To use Rottenstein's words, the vegetative functions remained intact, the animal functions were in abeyance. The seance was complete when the animal allowed once more access to the air recovered, after four or five gasps, sensibility, power of voluntary movement and intelligence.

It was determined to push procedure further and to employ similar means of producing anæsthesia by this method in the operating theatre: and this was done with perfect success as the sequel will show.

The first case was one under the care of M. Labbé, the operation was a most painful one, removal of ingrowing toenail. The patient, a delicate nervous girl, is reported to have taken the anæsthetic without reluctance, indeed expressed her approval of it after the first respiration or so: there was no cyanosis or lividity; heart's action did not vary; the patient slept quite peacefully, and only evinced signs of returning consciousness on removal of the face-piece when the operation was complete.

This patient suffered but one trouble, and that was extreme hunger, so much so, that on her removal to the ward, the cortège had to be stopped to procure her some food.

The pure nitrous oxide was employed, and replaced later on by a mixture of 85 parts nitrous oxide, 15 of oxygen.

As samples of further operations carried through under this method of anæsthesia, we may quote from Rottenstein's valuable work "*L'Anésthésie Chirurgicale.*"

Removal of tumour from breast, operation lasted	12 minutes
Resection of portion of infra-orbital nerve, lasted	12 „
Removal of carcinomatous tumour from axilla, operation lasted	26 „
Removal of tumour from left breast	12 „
Resection of portion of tibia	17 „
&c., &c., &c.	

In no case did the patient remain unconscious more than a minute when the face-piece was removed.

The patients were absolutely devoid of consciousness, and on awakening felt no ill effects of their enforced trance, no headache or sickness, and no irregularity of heart. It need hardly be emphasized what an immense advantage this immunity from sickness offers for operations, either in connection with the eye or the abdomen.

In one or two cases there was some muscular contraction, but this was at once removed by increasing the pressure.

To obtain these results, Paul Bert had resort to a specially constructed cabinet and pneumatic chamber, with a somewhat complex set of accessories to produce the desired pressure. We shall, in our next paper, describe these at length, although we believe that the same beneficial results will be able to be obtained with a far less formidable armamentarium.

(To be continued.)

AN UNUSUAL CASE OF CLEFT PALATE.

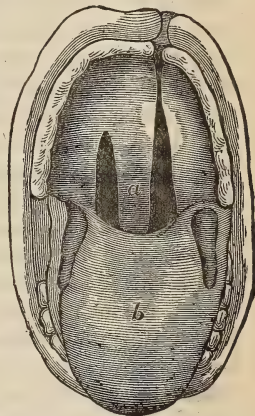
By A. ERNEST MAYLARD, B.S.Lond.,

EXTRA DISPENSARY SURGEON TO THE WESTERN INFIRMARY, GLASGOW,
CLINICAL ASSISTANT TO THE PROFESSOR OF SURGERY AT THE
UNIVERSITY OF GLASGOW.

THE following case was admitted into the Western Infirmary of Glasgow, under the charge of Professor Macleod, to whom I am indebted for permission to publish it.

The child, a male, aged four months, was brought to the infirmary with what appeared at first sight a simple uncomplicated case of cleft harelip, but on closer examination the following unusual condition of parts was seen. Immediately behind the cleft in the lip was a division in the alveolus,

and extending back directly from this with no deviation towards the middle line, a narrow fissure which widened out posteriorly into a well-marked interval. On the opposite side, at the same distance from the middle line, and running parallel with it, was an interval resembling precisely the posterior portion of the left cleft. The part between the two clefts was about one-fourth of an inch in width, and maintained this dimension in its course backwards, when, becoming slightly arched, it was continued into the posterior wall of the pharynx. On digital examination this central partition appeared to be bony in structure and uninterruptedly connected with the back of the pharynx, while both the clefts passed into the hard palate. Still further it was found that by the aid of a bent probe it was impossible to pass from one side to the other above the arch, the sensation being that of a bony septum completely separating the two sides of the pharynx above. The accompanying sketch, which was kindly taken for me by the ward clerk, Mr. Wallace, will perhaps help to elucidate the description. *a* indicates the central partition passing backwards to the posterior wall of the pharynx, having on the left the long cleft



continuous with the harelip, and on the right the short cleft ; *b*, the tongue.

Remarks.—The foregoing case presents, I think, features of unusual interest, both from its apparent uniqueness and from the peculiar developmental process by which it must have been produced. So far as I have been able to examine into the literature of the subject, I can find no parallel case on record. Most authors, in alluding to the posterior cleft of the palate, speak of it as *always* occurring in the middle line—an assertion no doubt depending as much upon the result of their experience as upon the deduction that in the normal process of development only such a median fissure can occur. Giraldès,* in his work on the Surgical Diseases of Children, figures a case

* "Leçons sur les Maladies Chirurgicales des Enfants," p. 151.

in which there appears to be a double posterior cleft, but there is no allusion to it in the context. That the malformation in the present case is the result of mal-development, and not of intra-uterine disease, there can, I think, be no doubt, and as such I shall venture to offer an explanation. To do so it will be necessary first to refer to the way in which the usual clefts are produced. It will be remembered that in early foetal life, at a time when the face begins to be formed, there descends from the frontal region a process known as the fronto-nasal plate, from which is developed at its upper part the integument and columella of the nose, and at its lower the middle portion of the upper lip. At the same time, there proceeds from above and externally on either side another process, the superior maxillary, which, winding round and extending towards the middle line, unites with the frontal-nasal plate to form the entire upper lip. Thus any failure of union between these two processes, either on one or both sides, will explain the formation of a single or double harelip; and upon the extent of that union the completeness or incompleteness of the fissure into the nostril. A harelip, then, must always be on one side of the median line.* With regard to the cleft of the alveolus and palate, which more immediately has reference to the present case, it will be remembered that at the same time in which the above process is proceeding there is also a deeper development taking place by which the walls of the nares are being formed, and the nasal cavity cut off from the buccal. The process may be briefly stated thus. Extending forwards beneath the primitive brain structure from the mass of blastema which surrounds the termination of the notochord, and which in the fully developed skull becomes the posterior part of the body of the sphenoid, are two processes known as the trabeculae cranii. These, after dividing so as to enclose a space which eventually becomes the pituitary fossa, unite again, and passing forward descend in the middle line immediately behind the fronto-nasal plate. From their termination is developed the intermaxillary bone or os incisivum, and from the upper coalesced portion descends a thin plate to form the matrix of the vomer, the perpendicular plate of the ethmoid and triangular cartilage of the nose—the nasal septum. Concurrently with this is the descent on each side of a plate known as the pterygo-palatine, which passing inwards and forwards towards the middle line, unite in front with the os incisivum and behind with each other, thus shutting off the nasal from the

* Rokitsansky alludes to cases of median fissure, and there is a specimen in the Royal College of Surgeons showing the same. The explanation appears to be in the non-development of the os incisivum and the incomplete union in the median line of the two lateral or superior maxillary processes.

buccal cavity, and containing the matrix of the palate, pterygoid, and part of the superior maxillary bones. It will now be easily seen that any failure in this the normal process of development, while it will produce a double cleft in front (*i.e.*, one on either side of the os incisivum), can only produce a single median cleft behind. In a case, then, of complicated harelip, in which the cleft runs completely through the alveolus, hard and soft palate, the line of fissure will commence in front on either side of the median line, course obliquely inwards after having passed through the alveolus, and then directly backwards through the centre of the palate. In the present case it will be noticed that the left cleft commences on one side of the middle line, and then without any internal deviation continues as a complete fissure through the palate. Such a fissure, without any other malformation, could undoubtedly be explained by excessive growth on one side with diminished growth on the opposite, just as not unlikely the high vaulted palate is produced by overgrowth on both sides. No such explanation, however, is tenable in the present case; and one must seek, I think, for the cause of the deformity in an abnormal deviation of the developmental process rather than in those more natural courses by which the usual malformations are produced.

I venture then to suggest the following explanation. Instead of the notochord ceasing, as it usually does, beneath the pituitary fossa, it has reached farther forward; and the encircling blastema instead of simply forming the matrix of the basi-occipital and basi-sphenoid has extended with it and become united with the plate descending from the coalesced trabeculæ cranii, which forms the nasal septum. Thus is produced the complete division of the upper part of the pharynx into two lateral halves. Did it not appear from the thickness of the osseous arch that it must be developed from the same blastema as gives origin to the basilar part of the occipital and posterior portion of the body of the sphenoid, homology would suggest a condition of parts like that found in amphibians and some kinds of fishes. In them there exists a distinct splint-like membrane bone, the parasphenoid, which extends from the basi-occipital to the parasphenoid regions, similarly dividing the upper part of the pharynx into two. Should the former be the true explanation, it becomes an interesting question as to how the future development of the face is likely to be affected. What influence will this thick bridge of bone passing from the basilar part of the occipital forwards to the septum nasi and superior dental arch have on those various changes in the development of the nose and superior maxilla which are brought about by the subsequent expansion of the sphenoidal sinuses

It is to be hoped for the patient's sake that the future somewhat unprepossessing underhung appearance which the foregoing arguments would suggest as a prognosis, may be compensated for or prevented by other means than those one is at present able to foresee.

[This paper has also appeared in the "Lancet."—ED.]

ON THE RELATIONS BETWEEN DENTAL LESIONS AND DISEASES OF THE EYE.

By HENRY POWER, M.B.Lond., F.R.C.S.,

OPHTHALMIC SURGEON AT ST. BARTHOLOMEW'S HOSPITAL, AND SURGEON TO
THE ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, ETC.

(Continued from p. 1100.)

About two months ago, however, he called at the hospital, and he then had conjunctivitis and some impairment of vision in the healthy eye, whilst the opposite one was tender and painful. I exhorted him to have it removed. He reluctantly, and only after a week or two of deliberation, consented. In the operation for removal I met with a difficulty. After dividing the conjunctiva and muscles, I introduced a pair of scissors, but was unable to divide the optic nerve. Larger and longer scissors were tried, and it was only after considerable trouble that the globe was enucleated. The reason of the difficulty immediately appeared, for a large piece of metal was embedded in the optic nerve, just where it might be expected that it would excite sympathetic ophthalmia, yet where it had remained for twelve years, with but slight effect on the opposite eye; for he made a good recovery, and was discharged on the 17th October, 1883, and has had no trouble since.

If the question be put, How does the irritation or inflammation of one eye come to affect the other—by what path, or paths, does the irritation travel? The reply given, both by exact clinical observation and by pathological investigation, is that in the vast majority of cases there is a neuritis which travels along the ciliary nerves, but in a few instances along the optic nerves, and we shall see that this conduction of the morbid process along the sheaths of the nerve is of considerable importance in enabling some explanation to be given of the occurrence of reflex troubles where the teeth are the seat of the primary lesion.

Injuries affecting the branches of the first division of the fifth pair are well known to affect the eye of the same side, and there are good reasons also for believing that affections of

other branches of the fifth pair of nerves may be the cause of ophthalmic troubles.

In 1853, M. Decaisne, staff surgeon of the Belgian army, presented to the Academie de Belgique,* under the title of "Sur les dents œillières," a note on the disturbances of vision consequent on alterations of the teeth, in which he states that he saw an officer struck on the forehead with a piece of wood in the course of the frontal nerve, which caused complete blindness, and then remarks that it is not uncommon to see diplopia, or even complete loss of vision, supervene, either with or without ulceration of the cornea, as a result of disease of the maxillary sinus.

That injuries to the supra-orbital nerve are occasionally followed by amaurosis seems to be well established. A case is recorded by Valsalva† of similar damage in which recovery is stated to have taken place. Unfortunately, however, in these cases the older authors had no means of knowing whether the deeper structures of the eye were injured or not. Some of the cases recorded might well have been accompanied by dislocation of the lens, by hæmorrhage in or detachment of the retina, by crushing of the optic nerve in the optic foramen, and by other conditions which the invention of the ophthalmoscope would now enable us readily to diagnose, and which can in no way be regarded as of a reflex nature. In one case, for example, the patient was thrown out of a waggon, and in another severely pecked by a turkey-cock. Severe blows and cuts over the brow and cheek may easily produce blindness by intra-ocular mischief, without causing any apparent damage to the surface of the eye. Thus Nossi‡ reports a case where a peasant was struck by a knife which cut the brow. M. Nicaise§ states that he has on various occasions noticed the coincidence that exists between affections of the nasal fossæ and those of the eye. He believes he has thus been able to recognise a connection between the occurrence of nasal polypi and glaucoma, attributable to irritation of the many branches of the fifth pair which are distributed to the mucous membrane lining the nasal cavity. Demours|| gives a case of amaurosis supervening after extirpation, *secundum artem*, of a sebaceous cyst of the size of a hazelnut; the same evening inflammation of the eye supervened, and the next day the eye was lost.

In 1870, M. Delestre published an essay on accidents following extraction of the teeth, and reports several cases which

* "Bull. de l'Acad. Med. Belg.," T. XIII., 1853, and "Archiv. Med. Mil.," 1854.

† "Dissert.," II. and XI.

§ "Gaz. Med. de Paris," 1871, p. 150.

‡ Himly, i, 89.

|| T. I., p. 173.

tend to prove the existence of visual troubles. He remarks that odontalgia is often accompanied with weeping and redness of the conjunctiva, with sudden darts of pain, and winking of the lids. He considers that there is at first irritation of the branch of the dentary nerve supplying the affected tooth, and which is therefore one of the branches of the superior or of the inferior maxillary nerve. This irritation of one part of the fifth extends to other parts of the fifth, and particularly to the ophthalmic, which leads to lachrymation, and redness of the conjunctiva.

That the teeth and the eye may be concomitantly affected as the result of some widespread and general disease of the system, as in syphilis, Mr. Hutchinson's observations have made abundantly clear, though there is little doubt that some cases closely resembling those which he has so well and carefully described are the result of other conditions of the system than those appertaining to syphilis; at all events, they occur in children in whom no evidence of syphilis can be obtained from either parent.

I apprehend, however, that this is not exactly included in the subject on which I am about to speak to-night. My object is rather to bring before you some evidence of the occurrence of ophthalmic affections as a consequence of dental disease. And the grand difficulty that I have met with in drawing any definite conclusions, is the extreme frequency with which dental affections present themselves. Thus, to take one affection alone, I was desirous of ascertaining whether dental caries and phlyctenular ulcer of the cornea stood to each other in the relation of cause to effect; but on examining the teeth of my young patients with phlyctenulæ, I found they all had carious teeth. It might be said, Is not that evidence that there is a close relation between the two affections? But, unfortunately for this view, the disease can readily be cured—in many instances—by the means usually adopted in ophthalmic practice without the extraction of the offending teeth, so that they only fulfil half the old adage constituting a *vera causa*, "*præsens morbum facit, sublata tollit.*"

Having established the existence of reflex irritation of the eye, it will perhaps be the best mode of treating of the various modes in which that irritation may express itself, if we consider it under the three following heads:—

1. Reflex irritation affecting striated and unstriated muscle.
2. Reflex irritation affecting the mucous membrane and cornea.
3. Reflex irritation affecting the optic nerve and retina, and intra-ocular tissues.

In regard to reflex irritation affecting muscular tissues, we may mention—

1. Paresis of the ciliary muscle.
2. Paresis of the intra-orbital muscle.
3. Paresis of the muscular fibres of the iris.
4. Paresis of one of the ocular muscles.
5. Paresis of the orbicularis palpebrarum muscle.

One of the commonest forms of visual disturbance, induced by dental disease, is *loss or failure of the power of accommodation*. By power of accommodation is meant the faculty which the eye possesses of adjusting its refraction so that well-defined images of objects situated at different distances from the eye may be formed upon the retina. This is accomplished, as is now well known, by the action of the ciliary muscle, which, by contracting, causes the lens to become thicker. For the lens is normally and, when the eye is at rest, covered anteriorly, and flattened by the anterior capsule, which is stretched by the suspensory ligament; but when near objects are fixed, the ciliary muscle is brought into play. This brings forward the anterior part of the choroid, and relaxes the suspensory ligament, and the lens immediately, by virtue of its own elasticity, becomes thicker, and is thus rendered capable of focussing divergent rays—that is to say, rays proceeding from near objects. The stronger the muscle, and the more elastic the lens, the greater is the degree of accommodation which can be effected; for under these circumstances, the suspensory ligament can be thoroughly relaxed, and the lens can become highly convex. Hence accommodation is strong, or has a great range, in children, extending from infinite distance to a point not more than three or four inches from the eye; for in them the ciliary muscle has great power, and the lens is very elastic. In advanced age, on the contrary, the muscle becomes feebler, and the lens is of firmer consistence and much less elastic. The suspensory ligament, consequently, does not undergo much relaxation, and the lens does not swell when the compressing influence of the anterior capsule is withdrawn. Hence the range of accommodation diminishes; distant objects, from which parallel, or approximately parallel, rays proceed, are still accurately focussed upon the retina; but any small object, to be clearly seen, must be held at a distance of 10 to 12 or 18 inches from the eye.

The influence of dental lesions on the accommodation has been particularly investigated by Dr. Hermann Schmidt, of Berlin. This observer examined the eyes of ninety-two patients, who presented themselves at his clinic, suffering from some form of dental disease—such, for example, as caries, periostitis, or neuralgia. Considerable pains were taken to

determine the range of accommodation in both eyes, and to compare that on the sound with that on the unsound side; whilst reference was made to the tables of averages for each eye given by Donders. Amongst the ninety-two cases, Schmidt found there were only nineteen cases in which the range of accommodation was normal, or better than normal; in the remaining seventy-three cases the range was lowered, and in most instances considerably reduced.

In unilateral odontalgia, the range of accommodation was reduced on the same side in thirty cases. In fifty-one cases there was no difference in the diminution of the range of accommodation perceptible. In one case, the eye of the side opposite to the unsound teeth was the weaker of the two. In nine cases the teeth were carious on both sides. It appeared further that the influence of dental lesions on the accommodation was more frequent, the younger the patient, the ages between ten and twenty being those in which the paresis was most marked. After thirty years of age the impairment of the power of accommodation was much less frequently observed.

The influence of sex was not noticeable.

In regard to the locality of the dental lesion; in forty-one cases in which the upper maxilla was affected, paresis of accommodation was observed seventeen times. In thirty-nine cases in which the lower jaw was affected, the paresis was observed nineteen times. Disease of the teeth of the lower jaw, therefore, appeared to be somewhat more effective in producing failure of accommodation than that of the upper jaw. Disease of the incisors, and of the first, third, and fifth back teeth, using the German mode of notation, appeared to be more frequently associated with the ocular disturbance than lesion of the canines or of the second and fourth back teeth.

The nature of the dental lesion appeared to be of little importance, great impairment of accommodation accompanying comparatively slight disease, whilst extensive disease of the teeth, accompanied by severe pain, was associated in some instances with only slight paresis of accommodation.

Dental lesions appeared to have no effect upon the sharpness of vision.

The impairment of the power of accommodation was only rarely noticed by the patients themselves, which perhaps might be in part attributable to the circumstance that in most cases, if the patients was suffering much pain, the ordinary avocations were suspended.

The explanation of this remarkable effect of dental lesion is not quite clear. Two views may, it appears to me, be taken of it. We may regard it as of a reflex character, and as being

analogous to that weakness or paralysis of certain muscles observed in some of the reflex paralysis of infancy, and which we may consider to be of the nature of an inhibitory influence, since they rapidly supervene and rapidly vanish; or we may regard it as a simple result of the generally lowered tone of the system, consequent on the depressing influence exerted by the dental lesion. I need hardly dwell in this place, and before such an audience, on the extraordinary powerful effect on the nervo-muscular and circulatory systems of prolonged toothache, or how the impairment of the digestive functions, the sleeplessness, and general feeling of malaise, lower the tone of the nervous system, and produce indisposition for all kinds of mental and bodily exertion. There can be little doubt that the sympathetic nervous system and the unstriated muscles participate in this depression; and we can easily understand how there is a corresponding diminution in the power of the ciliary muscle, and failure of accommodation.

Schmidt himself advances a very different explanation. He believes that in these cases a reflex stimulation of the vaso-motor nerves takes place, leading to increased intra-ocular pressure, and consequently to impairment of the power of accommodation. But when Schmidt's paper was written the action of the vaso-motor nerves was less known than at present. And such reflex stimulation would seem calculated to lead to a diminution, rather than to an increase, of intra-ocular tension.

To enable us to speak quite positively upon the influence of carious or painful teeth upon the accommodation we require information that is very rarely attainable. We ought to know that the accommodation was thoroughly good before the teeth were affected, that the failure of accommodation occurred simultaneously, or soon after the dental lesion; and, finally, that after the removal of teeth, recovery of the accommodation power takes place.

In the majority of cases we must rely upon the patient's word for the first of these factors of our judgment; and in regard to the second, so many persons of both sexes, and all ages, are affected with dental disease that if this be a *vera causa*, good accommodation would be the possession of only a favoured few; whilst lastly, even Schmidt, who paid particular attention to the subject, was only able to examine eight cases, out of nearly a hundred, after the extraction of the offending tooth or teeth. In five of these, however, distinct improvement was observed. The diminution in the power of accommodation was in each case characterised by the recession of the near point, whilst the far point remained unaltered. After extraction of the affected teeth the near point approximated to the eye.

Another class of cases in which a reflex influence appears to be exerted upon muscular tissue is that in which the muscular tissue of the iris is affected. This condition is termed *iridoplegia*, or *mydriasis*. In it the pupil is widely dilated and motionless, owing, as is generally believed, to paralysis of the sphincter pupillæ, which is supplied by the ciliary nerves containing branches of the third nerve; but it is possible that it may be due to contraction of the dilatator iridis, if such a muscle really exists, and this might be produced either by irritation of the branches of the sympathetic or of the fifth pair, which Bilogh believes supply it.*

It is remarkable and suggestive of its mode of origin that mydriasis rarely if ever occurs simultaneously on both sides, and in many cases that I have seen in past years I have scarcely ever been able to trace the ætiology, though I must admit that I have not paid special attention to the teeth. It is instructive to find that in one case recorded by Desmarres, a cure was effected by the extraction of a carious molar, and in future I shall certainly, in any case of the kind that may present itself, make a careful examination of the teeth.

In the cases that have fallen under my care the dilatation of the pupil has been permanent, which points rather to some organic lesion, such as might be produced by neuritis, than to any inhibitory influence.

One case, and so far as I know one case only, of *exophthalmia* has been placed on record. It is contained in a recent number of the "Recueil d'Ophthalmologie" of Galezowski, 1882, p. 441, and is reported by Weinberg. The chief facts of the case are that a widow presented herself in the out-patient department with an *exophthalmia*, accompanied by severe pain of the right eye. She had suffered for thirty-five years from epileptic vertigo and cramp of the stomach. In the month of March of last year she had an attack of phlebitis of the left femoral vein, and on examination she had varices in this leg, and some œdema of the left leg. For five weeks previously she had experienced noises in the right ear, with fronto-temporal cephalalgia of the same side and pricking sensations of the eye, which has lost its normal aspect, and she had intermittent sleeplessness. The pricking sensation gave place to lancinating pain, the eye reddened, and the bulbar conjunctiva was strongly injected. For four days previous to her appearance the vision had become hazy.

On examination the tension was found to be + 1, and there was *exophthalmia* of the right eye. The cornea was hazy; the palpebral and bulbar conjunctiva were much injected; the movements of the eye outwards and inwards were insufficient.

Ophthalmoscopic examination showed floating particles in the vitreous, and as she was *myopic* a crescent, the peripheric retinal veins were injected. The whole retina was redder than natural; near the macula were several hæmorrhagic spots. The heart, arteries, lungs, and the urine were normal. She could read No. 1 at 3 inches distance. Two leeches were ordered to the right temple; alternating instillations of atropine and eserine were ordered, but the former gave pain and was discontinued.

Ten days later, severe periorbital pain being experienced, with acute chemosis, the teeth were examined, and two carious teeth and a stump were found and promptly extracted. The results were remarkable. In the course of three days the patient was greatly improved in health, the chemosis had disappeared, as well as the injection of the conjunctiva, and above all the exophthalmia.

In such a case as this we might attribute the relaxation of the vessels spoken of as conjunctivitis to paralysis of the vasomotor system, and consequent passive dilatation of the conjunctival capillaries; whilst the protrusion of the globe may have been due to relaxation and loss of tone of Turner's periorbital unstriated muscle and of the several recti muscles, as well as to the relation of the vascular and lymphatic systems behind the globe—all conditions that are explicable on an inhibitory influence being exerted by the damaged tooth.

That *strabismus* may be induced by dentition, and especially by difficult dentition, is, I think, generally admitted. Travers, as long ago as 1824, wrote: "Strabismus is also a symptom of irritation arising from difficult dentition." Many cases of strabismus come on quite suddenly, sometimes without the occurrence of any fit, but oftentimes immediately after a fit during the first year of life, and therefore, when the muscular exertion of the eye, requisite to be made to effect accommodation, can have had nothing to do with it, for few children look intently at near objects, when alone the accommodation is brought into play, during the first few months of their existence. Yet the opinion that dentition is a cause of strabismus seems to rest on general consensus of opinion only, rather than upon any special well-authenticated cases. And the frequency with which it is referred to in recent books is much less than was formerly customary; in fact, in some of the more recent treatises in Germany and France it is not even mentioned. This is attributable to the important generalisation of the ætiology of strabismus made by Donders, that in by far the greater number of cases it is due to hypermetropia.

(To be continued.)

MATERIA MEDICA.

By MR. STAINER.

(Continued from p. 1109.)

AMYL NITRIS.

As the use of this medicine is so often indicated in cases where the heart's action has been alarmingly lowered by anæsthesia, I have thought it better to give it a place next. There are two distinct phenomena arising from its administration. 1st, the heart's action becomes instantly accelerated. 2nd, the whole of the skin becomes red—this action is produced by its affecting the local mechanism of the heart, paralysing the ends of the vagus nerve, and here I will explain, there are two nerves coming from the medulla oblongata, which act in regulating the heart's action, one the pathetic or accelerating nerve of the heart, the other the cardiac branch of the pneumogastric, the inhibitory or restraining nerve of the heart, so that to control the heart's action a medicine must be given that will act on one of these two nerves; now one drop of the nitrite of amyl when given, or the vapour when inhaled, causes a great and rapid fall of blood pressure with accelerated action of the heart. The inhibitory or restraining nerve has lost its power, and to illustrate the effect we will compare it to the throwing the reins over a horse's back and letting him go at a stretch galop.

From two to eight minims of the nitrite inhaled by a healthy man, quickens the pulse rate in from three to ten seconds, this is followed by flushing of the face, with throbbing of the carotids and a sense of oppression in the chest. Headache usually follows when these effects have subsided, that headache should be produced is not to be wondered at when we find it is prepared from amylic alcohol or fusel oil, which is contained in all new or unmaturred spirits, as brandy, whiskey, &c.

ARSENIC.

Its Natural History.—Arsenic is peculiar to the mineral kingdom, it occurs in the metallic state, and in combination with oxygen, sulphur, and other metals. Arsenious acid, or white arsenic, as known to the dental student, was first distinctly mentioned about the eighth century; it is usually collected in flues after roasting or smelting the ores of cobalt, tin, or iron, this is the commercial kind, which is afterwards purified.

Its physiological effect in very small quantities, as $\frac{1}{16}$ or $\frac{1}{12}$ grain, no obvious effects are usually produced by its use unless persevered in for a long time; its long continued use

produces fatty degeneration and disorganizes the whole of the metabolism, or that great process which goes on through all parts of the body at every moment of life ; it interferes with the sensory part of the nervous system and acts on the glycogenic function of the liver ; it causes loss of appetite, thirst, nausea, griping, &c.

Therapeutics.—When administered in disease it acts as an antiperiodic, alterative, antispasmodic. In hernicrania, and neuralgia of the brow, or brow ague, and facial neuralgia, it seldom fails to relieve ; some authorities in comparing its value in the above affections with that of quinine, give it the decided preference.

Poisonous Doses.—I will here try to explain what a poison is, and it will apply to all such substances contained in my paper. It is extremely difficult, if not impossible, to *correctly* define a poison, for amongst old sayings we find, “What is food to one is poison to another.” I have seen excessive doses of some medicines taken with impunity, and have witnessed bad effects produced from others, in almost infinitesimal doses. Dr. Guy says, “A poison is any substance which when applied to the body externally, or in any way introduced into the system without acting mechanically, but by its own inherent qualities, is capable of destroying life.” Now, this definition seems as good as could be given for medico-legal purposes, but it does not seem to commend itself as a correct scientific statement, as the word inherent can hardly be said to apply to the action of oil of vitriol, the effect of which seems purely a mechanical injury ; for instance, when this has been swallowed suddenly, almost instantaneous death has been caused by suffocation, just in the same manner as a piece of meat getting into the trachea. Some poisons are narcotic, as opium ; some are irritants, and as their name implies, cause irritation or inflammation ; some of this class are taken up by the blood, and through it they irritate the nervous system ; others are corrosive and destroy the lining membrane of the mouth, throat, stomach, and intestines, as well as any adjacent structures with which they come in contact. Arsenic belongs to this class ; it acts locally when taken into the stomach, and also remotely on the stomach through the blood by absorption, as when it is placed under the skin or applied to an open wound. But even exception must be made to this statement, as in the case of Pope Gregory XVI., he had a corroding ulcer of the nose, which was treated successfully with the arsenic paste, so that the ulcer healed and there was no relapse during the remaining eight years of his life.

If a poisonous dose of arsenic be taken the person generally dies in a state of coma, which means that the nervous system

is affected, and ceases to influence the movements of the muscles, so that respiration and circulation of the blood are impeded. The first symptoms of poisoning usually comes on about an hour after the poison has been taken.

Dr. Christison says the smallest fatal dose he has found recorded was $4\frac{1}{2}$ grains.

Dr. Letteby reported a case where 2 grains proved fatal in 36 hours.

Dr. Alfred Taylor considers that from 2 to 3 grains, may be considered as a fatal dose. I have read of extraordinary large doses having been swallowed immediately after a hearty meal, with but very slight consequences beyond vomiting; here, no doubt, the distended condition of the stomach saved life.

Mr. Coleman, in his "Manual of Dental Surgery," has given us an excellent view as to the probable effect of arsenious acid when applied to soft-living tissues. He states that it has two kinds of action, one escharotic, in which it destroys vitality by forming compounds with their albuminous constituents, from which I conclude that a chemical rather than a physiological effect is produced on the tooth pulp; the other a powerful irritant, exciting severe inflammation, and it is generally believed that it is chiefly the latter action terminating in sphacelus (which signifies an utter and irrecoverable loss of life), causes destruction of vitality in the dental pulp.

IODINE.

Its History.—Iodine was discovered in 1811 by M. Courtois, a saltpetre manufacturer at Paris; it is found in a few minerals, but is chiefly obtained by the manufacturers from seaweeds, sponges, and other marine organisms, which derive most of their nourishment from sea-water, and store up iodides as iodide of sodium and iodide of magnesium, in their tissues, and it is from the ashes or kelp of these that supplies of iodine are obtained.

Its Physiological Effect.—That iodine becomes absorbed when employed either externally or internally, is now an established fact and beyond dispute, as its presence has been found (in those patients under its treatment) in the blood, also in the secretions, as the urine, sweat, saliva, &c. It has been termed an alternative by its controlling and modifying influence over the blood-vessels of the affected part, and has been considered a tonic from the fact that it sometimes increases the appetite of phthisical patients.

Therapeutics.—As a remedial agent iodine is principally valuable for its resolvent influence in chronic visceral and glandular enlargements, indurations, thickening of membranes (as

of the periosteum) and in tumours. By its *resolvent* influence, I mean that it possesses the power to disperse inflammation (particularly the early stage when its injurious effect on a living part has been in such a mild degree as not to destroy the vitality at once), and prevent the suppuration of tumours, hence the reason why the tincture is so often used by the dental student to paint the gums in cases of periodontitis and threatened alveolar abscess. It is perhaps worth remarking that when iodine is taken internally the patient should be kept, as much as possible, from farinaceous food, for if the dose be taken directly after one of these meals its effect is considerably lessened, as, with starchy substances, it forms an iodide of starch. It is usually given in the form of potassic iodidum, or in conjunction with it; in very large doses it acts as an irritant poison, causing inflammation of the bowels and death.

ACONITE,

Either in root or tincture, when swallowed, causes numbness and tingling of the parts about the mouth and throat. It produces perspiration, acts on the kidneys, and lowers the action of the heart. Externally it paralyses the terminations of the afferent nerves but does not affect the *centres*. Now these centres are masses of protoplasmic (or as Dr. Beale prefers to name it bioplasmic) substance, which receive the impressions carried up by the afferent or sensory nerves; some peculiar change takes place, probably a chemical one, in the centres, and impulses are carried down by the efferent or motor nerves. Sensations cause the impressions; the impulses are the reflex action of the impressions; thus, the physiological effect of aconite leads us to the therapeutical uses of this medicine, and the dental student will now understand why he employs the application composed of equal parts of the tinctures of aconite and iodine, for a benumbment like aconite is obviously the physiological remedy for increased sensibility or, in other words, "pain of the nerves." In neuralgia it stands at the head of topical remedies; I have witnessed it produce instantly almost a magical effect in some cases, but in others it causes some degree of disappointment, probably from the fact that as neuralgic affections arise from usually obscure causes, we are not able to determine whether or not the case is amenable to the treatment of aconite and it is consequently employed empirically. It has been observed, by some writers, that when it succeeds it gives more or less relief at the first application, and that when the disease depends on inflammation, it is an unavailing remedy. Although this would apply to a painful affection of the nerves of the face arising from inflammation of the socket of a tooth, I should

always be inclined to give it a trial. It is a very effectual remedy in otalgia or neuralgia of the ear, when painted behind this organ; of course in a case of this kind the mouth should be examined for carious teeth as well. Dose of the tincture, which is the most reliable preparation for internal use, 5 to 15 minims or more, gradually increased, as its use requires great caution.

For external use, one part of the linimentum to two or three of the linimentum saponis co.

QUININE.

Its History.—Cinchona bark, of which quinine is the alkaloid, is said to have been first introduced into Europe between 1632 and 1640, by the Countess Chinchon, from Peru to Spain. About ten years afterwards it found its way to Rome, being carried there by the Jesuits, who had discovered in it the properties for treating ague.

Its Physiological Effect.—In small doses, quinine improves the appetite and assists digestion; in large doses, as ten to twenty grains or more, the sulphate has been known to cause three classes of effects.

1st. Gastro-enteric irritation; such as pain and heat in the stomach, sickness, griping, and purging.

2nd. Excitement of the vascular system, made known by an augmented frequency and fulness of the pulse and increased respiration.

3rd. Disturbance of the cerebro-spinal functions, producing headache, giddiness, agitation, and even in some cases delirium; some of these effects have come under my personal observation.

Therapeutics.—Quinine will control local inflammation from abscesses, boils, &c., and it has the deserved reputation of being able to cure or relieve some forms of neuralgia, *not* of malarial origin, but of that kind which assumes a periodic character. However this may be, some medical authorities assert that it does act on the fifth or trigeminus nerve in this form of neuralgia, which must be considered the first stage of ague. By its anti-malarial properties I ought to mention that quinine is very slowly excreted, and when it is so, it is in the form of quinine in the wine; it prevents decomposition by its antiseptic properties; binds the oxygen to the red corpuscles, and makes every cell in the body live slower, and I once heard an eminent London physician remark, that it should not be given unless the quantity of urea and the temperature of the body is daily examined. Dose, as a tonic, one or two grains may be given three times daily. For neuralgia, three to five grains every four hours. I think the best vehicle for

taking it in is milk. If the patient be of an anæmic and debilitated constitution the preparation of citrate of iron and quinine should be continued after relief has been obtained from the quinine, in doses of five grains, three times daily. The cinchona or Peruvian bark has been found an excellent dentifrice, when combined with myrrh, in cases of spongy and foul conditions of the gums, probably by its absorbent and antiseptic properties.

(To be continued.)

CASE OF TRISMUS.

By GEORGE BENNISON, L.D.S. Edin.

VERY little is to be seen in the various text books concerning Tetanus, and certainly nothing about Trismus being induced by having teeth fractured.

A case recently came under my observation, and I should be glad if other practitioners would give their experience in similar cases, being quite sure it would be of great service to the majority of their professional brethren.

On Tuesday, Oct. 30th, W. P., a police constable, came to me in some alarm, being unable to open his mouth, and having great difficulty in swallowing liquids. He was not able to put solid food between his teeth.

From what I could gather, he had been suffering greatly (evidently due to the wisdom pressing on the second molar) and had gone to a chemist for relief. In the attempt to extract the tooth, it was broken off close to the gums, and a small portion of the alveolus splintered. Then, to relieve the pain, creosote was applied.

The parts were much swollen by the next day, although he did not take much notice of it, but as it did not lessen in size in five days, he applied to the divisional surgeon, who referred him to me.

On examination, I found the parts highly inflamed, and extremely sensitive, and with the appearance of the tooth having been driven back into its socket. As probing gave him great pain, I directed him to use warm fomentations of poppy heads, &c., and come to me the next day. On the 31st, it was much easier, and I could make more minute observation. On Nov. 1st, it was more painful and rigid, in consequence of which, I determined to remove the offender, next day. I did so, with the assistance of Dr. Keith Welsh, the patient being under the influence of nitrous oxide. I separated the jaws by means of Coxeter's screw gag, and used the curved elevator.

Directly consciousness returned, he experienced great relief, being able to move his lower jaw with ease. However, on the 3rd, he was unable to move it to any great extent, as it was attended with severe pain.

I advised the continuance of warm fomentations, and gave him a saline purgative. On the 5th, the swelling had decreased, and the movements of the jaw were attended with less pain. By the 8th, great improvement had taken place, he was able to take solid food, and before the 15th, mobility was completely restored.

The tooth was of normal size, but had a small growth (exostosis) at the posterior part of the fangs.

CIVILIZATION NOT THE CAUSE OF TOOTH DECAY.

By JOHN J. R. PATRICK, D.D.S., Belleville, Illinois.

(Continued from p. 1117.)

Among the permanent teeth of man, the anterior twenty are permanent succedaneous teeth, as they take or fill the place of the deciduous teeth that are swept away from the superior and inferior maxillaries. The other twelve, which are the posterior, having had no predecessors, are permanent, immutable teeth. Now the eight premolars, while they are preceded by the eight deciduous molars and are classed with the twenty anterior permanent succedaneous teeth, deserve to be considered separately, as they do not resemble their predecessors either in the form of the crown, or the length and number of roots; neither do they occupy as much space as their predecessors. This arrangement, order of succession, and development of the teeth in man does not take place in any other class of animals with the exception of the higher orders of quadrumana.

6th. The longevity of man, as compared with other terrestrial animals, is an important factor in the question under consideration. Man hardly attains his majority when most animals have completed the term of their existence. Aquatic animals as a rule live longer than terrestrial, and fishes appear never to grow old, but seem to enjoy a perpetual youth; and if they lose a tooth by accident it is at once renewed like their scales.

7th. Are animals under domestication more subject to disease of the teeth than wild animals? Of all animals the ruminants are those which are most useful to man. They

furnish him with food, and nearly all the flesh that he consumes. Some serve him as beasts of burden, others with their milk, their tallow, leather, horns, and other products. This class of animals *cannot exist on anything but their natural food—herbage*; and they have to be in a healthy condition in order to be useful. When cows are stabled and fed on slop by avaricious ignorant men, they become unhealthy and lose their teeth, not by decay (for they do not live long enough), but by a rapid absorption of the alveoli.

The hog, like man, is an omnivorous animal, but when raised for the purposes of food, ought to be fed on vegetables, seeds, and grain. Under domestication he lives well and naturally, but dies too young to determine the baneful effects of civilization on his teeth. Very few of the animals that are used by man for food are permitted to enjoy but a small portion of their full term of existence. The horse under domestication lives naturally as regards his food, with this difference—under domestication he receives more grain, and his food is brought to him, and the work that is imposed on him takes the place of the exercise he would have to undergo in a wild state in his search for food. Their teeth wear down with age, and I have never known of a decayed tooth being found in a horse's mouth. Dogs and cats live longer under domestication than the same order of animals in a wild state; they are carnivorous, and owing to the shortness of their intestines are incapable of living on any other kind of food; when old they lose their teeth by absorption.*

From these considerations it appears that domestic animals are better fed, and such as are not used for food by man, live longer than in a wild state; and inasmuch as all animals, with the exception of man, are restricted by their anatomical construction to certain kinds of food, their diet under domestication *is natural*. All animals are incapable of sustaining themselves by forming living matter or protoplasm from the inorganic world, but absolutely need for their subsistence a food consisting of organic matter already formed; with plants it is otherwise, they live upon inorganic matter only. Now the vegetable kingdom draws its food from the mineral kingdom, and the animal kingdom derives its sustenance from the vegetable, either directly or indirectly: directly by the herbivorous animals, and indirectly by the carnivorous; there is nothing more clear than that the consumed must pre-exist the consumer. Now, as all animal tissues are of a more nitrogenous nature than vegetables, and as the nitrogenous compounds in vegetables are found principally in the seeds and fruits of plants, it follows

* See "Comparative Longevity in Man and the Lower Animals," by E. Ray Lankester, B.A. London: Macmillan and Co. 1870.

that animals who live on seeds and fruits require more of the nitrogenous compounds, and the alimentary canals of such animals are shorter than the herbivorous and somewhat longer and more complicated than the carnivorous.

8th. Does the habitual use of superfine flour, or the use of any of the cereal grains, deprived of their bran or husk, tend to weaken the structure of the human teeth?

The advocates of "feeding the teeth" *on the brown-bread plan* may save much valuable time, and find a solution of the question by considering the chemical properties and construction of a grain of wheat.

Dr. TAYLOR asked some questions, in regard to the portion of the grain of wheat that contains the largest proportion of the phosphates, and Dr. PATRICK, in reply, gave some description of the structure of the grain, as follows:—

- | | |
|-------------------------------|-----------------------------------|
| 1. First fruit coat. | 7. Hexagonal cells. |
| 2. Second fruit coat. | 8. Cells filled with starch grns. |
| 3. Third fruit coat. | 9. Seam or crease. |
| 4. First seed coat. | 10. Germ or seed in which |
| 5. Second seed coat. | the oleaginous matter of |
| 6. Albuminous layer in cells. | the grain is contained. |

Bran proper is the external rind of the skin represented by the five coats; it consists of woody fibre or lignine, and is coated with a shining layer of flint or silica, which protects the body of the grain from the action of the atmosphere; and unless its continuity be broken the gastric juices cannot act upon the starch and albuminous matter contained in the cells of the grain. Now the albuminous layer (No. 6) which adheres so tenaciously to the five coats is really the only bone of contention, not only with the miller in a pecuniary sense, but with the brown-bread philanthropists. This albuminous layer is made up of cells, the walls of which are made up of cellulose, and the thicker the cell-wall for the same sized cell, the less nutrition there will be (for cellulose is indigestible), and that which is contained within these cells is albuminous matter; a nitrogenous compound which is made up of the proteinaceous alimentary principles. This albuminous layer contains no starch grains but holds in its cells from 8 to 15 per cent. of the albuminous matter of the whole body of the grain, for the interovular spaces which surround the starch grains in the hexagonal cells are filled with albuminous matter, and fully 85 per cent. of the albuminous matter of the whole grain of wheat is contained in these hexagonal cells.*

* If a quantity of superfine flour be mixed with a quantity of water and kneaded, the particles will cohere and form a smooth, elastic and tenacious

Now if the bran, including the albuminous layer, were thrown away, the loss of the nitrogenous matter would be less than 15 per cent., and the rest of the grain would contain more of the plastic elements of nutrition or the nitrogenous or flesh-forming elements of food than rice or most other grains contain, and the consumer could very well make up the loss in volume, and then not eat as much of the starches or non-nitrogenous heat-producing elements as the rice-eating nation do to obtain the same amount of nitrogenous compounds. Now it must be remembered that these tissue-forming elements are not found in the bran or husk of the grain, and the presence of these bran coats in flour impairs its value for food, for a grain of wheat, uncrushed, will pass through the whole length of the alimentary canal unaffected by the gastric juice, so that there is a great waste in using imperfectly pulverized grain of any kind, as the husk bran partially protects the nutritive portion that adheres to it from the action of the gastric juice; and where the bran acts on the intestines as an irritant, either in a greater or less degree, so does it hasten the passage of the food through the canal in a partially undigested condition. There would therefore be nothing gained in the use of the husks of the grain excepting where a laxative was indicated. Now the ligneous and silicious layers which form the cells and coats of the grain are insoluble, and however fine they may be pulverized, or however perfectly they may be cooked, when eaten either by man or beast, these substances will be found in the excrements of the animal unchanged.

(To be continued.)

dough. If this dough be placed upon a sieve, or on a piece of muslin stretched over a vessel, and worked with the hand under a stream of water, the water will become milky and pass through into the vessel. If this process be continued until the water becomes clear, and the milky water in the vessel becomes clear by standing, a white powder will be found at the bottom of the vessel. This white powder is the common wheaten starch. The white sticky substance that remains upon the sieve or muslin is called gluten, which contains the nitrogenous or tissue-forming elements of the grain; starch being the non-nitrogenous or heat-producing portion of the grain. Starch is found in most organic combinations, and as it is an important article of commerce, extensive manufactories for the production of starch exist in most civilised countries. The principal vegetables from which starch is obtained are—potatoes, maranta-indica, beans, sago, palm, Iceland moss, peas, wheat and Indian corn. Now as one hundred parts of wheaten flour yield twenty-five per cent of gluten, this valuable portion of the grain is not thrown away, but is mixed with a double weight of flour, the paste rolled into long strips drawn into tubes, or made into granules, and is known in commerce as macaroni, sago, and vermicelli. People who use these preparations of vegetable gluten extensively lose the desire for animal food. Query:—If brown bread will perform wonders in stopping the tendency of teeth to decay, what ought we to expect from the use of macaroni, which is charged with seventeen per cent. more of the “tooth producing elements?”

ADDRESS DELIVERED AT THE MEETING OF
THE ODONTO-CHIRURGICAL SOCIETY OF SCOTLAND.

By the President, ANDREW WILSON, L.D.S.Ed.

(Continued from p. 1123.)

In "On Pivoting," by Mr. R. Hepburn, London, while claiming nothing original, a general résumé is given of the different modes of pivoting teeth, and the sort of cases in which it could be done with advantage considered.

In 1874 Mr. Campbell gave "On the Conservative Treatment of Exposed Dental Pulp," premising that we need not expect a specific remedy for all and every condition of exposed pulps, so much depending on the temperament, general health, &c., of the patient; he arranges the cases in three classes. First,—healthy pulps; the exposure having been accidental while preparing the cavity for filling. Second,—pulp which had recently become the seat of acute inflammation, but not involving the periosteum. And third,—pulp in which the inflammation had become chronic.

In the first class, mere protection from the pressure and irritation of the filling was all that was requisite, while in the second and third, treatment (slightly different in the two classes) to reduce the inflammation came first, and in them a comparatively temporary stopping was put in, to be replaced by a permanent one after a decided interval. In stopping over healthy exposed pulps, he protected the pulp by a covering of bladder, then partially filled in the cavity with oxychloride, finishing with the metallic stopping; without the protection of the bladder, he had found many of the preparations of the oxychloride set up irritation, and caused failure.

At the same meeting Mr. Campbell exhibited the Burring Engine, and pointed out its many advantages.

Later in the year Mr. D. Hepburn (London), gave them a paper "On the Effects of Mechanical Irritants on the Structures of the Mouth." In it the sources from which they might have such irritation proceeding, were thus classified: 1st, by the teeth themselves, when in a diseased and even in a healthy condition; 2nd, deposits of tartar; 3rd, from all mechanical appliances; 4th, from substances inhaled or taken into the mouth.

As examples of the first class were cited the action of the cusps of sound teeth on the tongue when the latter organ was in an unhealthy state, and the much more serious effects when the edges of the teeth were sharp and ragged. The action of decayed teeth in producing tumours, and the labial and buccal ulceration frequently produced by the necrosed

roots of temporary teeth. In the second, tartar, when under the free edge of the gum, as also stoppings projecting beyond the cavity and impinging on the gum, and lastly in the third class, clasps or bands on artificial dentures, elastic bands when improperly used, and the mischief caused under certain circumstances by obturators.

In 1875, Mr. Brownlie (Glasgow), in "Some of the Properties of Amalgams-Shrinkage," gives the details of a very elaborate series of experiments with amalgams, and also describes the apparatus used in doing so. Unfortunately the amalgam chiefly experimented with was the copper, so that the results form no criterion as to the behaviour of the complex alloys usually employed in practice. The publication of this paper led to a most extensive and conflicting correspondence in the Dental journals.

In his paper on "The Teeth of the next Generation" Mr. Oakley Coles (London), points out that as the teeth are so far advanced at, or soon after birth, the only hope of improvement lay in inducing the mother to restrict herself during pregnancy and lactation to such dietary and habits as were likely to better the quality of the dental tissues in the infant, a change which, if it could be brought about, would have to be so by medical, not by dental influence.

Dr. Roberts gave two short papers, "Revival of an old Method of Stopping," and "Proposed Extended Use of the Burring Engine in Surgery." The former was the screwing of pieces of hippopotamus dentine into carious human teeth, and the latter the use of the engine in the excision of bone from the maxillæ and in trephining.

In December of the same year Mr. Finlayson gave a demonstration on "Continuous Gum Work," at his own residence, which was numerously attended by members.

In 1876 three papers were read, of which that by Mr. Campbell, "On the Preparation of the Mouth for Artificial Teeth," Part I., was the most important. The points treated being first, the retention or removal of isolated teeth, as also of roots, and secondly, the time to be allowed for the absorption of the injured alveolar processes.

In the first, he advocated the retention of every firm tooth at all free from disease, as also those teeth which, though diseased, were yet amenable to treatment. As to roots, he removed all which were either wholly or partially covered by the gum. While in the case of roots projecting but firm, he retained all except those of the upper molars. He filled the canals in roots left in the upper jaw, and where possible those in the lower also. In the second division, while frequently inserting partial cases shortly after extraction, he

usually allowed from three to five weeks in the case of complete dentures, remodelling when necessary according to the absorption of the alveolar border. He also strongly recommended the use in the lower jaw of gold lined with Truman's gutta percha.

Mr. Kyan (Preston), gave a short paper "On some additional uses to which Stent's or Hind's Composition may be applied in the Dental Art;" these were, temporary models in repairs, for taking the outlines of cases requiring to be duplicated, as bite adjusters, and for trial plates.

Mr. Bridgman (Norwich), gave "Honey-combed Teeth, a phase of ordinary decay," in which he held that honey-combing was due to electrolytic action, causing an irregular removal of the surface of the tooth during its eruption.

In December of the same year Mr. Watson exhibited cases of Replantation of Teeth in young patients.

In 1877 there was a more liberal supply of papers, Mr. Campbell giving the second part of his paper, "On the Preparation of the Mouth for Artificial Teeth." The only new points taken up being, first—the treatment of the alveolar ridge immediately after extraction, and second—whether dentures inserted within two or three months subsequently should be termed "temporary." In the former he advocates the trimming off loose flaps of gum, and ragged projections of the alveolar margins, but in the upper jaw only, the latter, for several reasons, he answers in the negative.

The subject of "Amalgam Fillings and their Defects," was given by Mr. Bridgman. He divides amalgams into two classes, electro-positive and electro-negative; in the former the mercury is the positive element and therefore becomes oxidised, in the latter, the alloy or solid ingredient is the positive and oxidisable portion, while the mercury is negative and so protected from oxidation.

In the case of a positive stopping the surface retained its colour, while the dentine was stained, in a negative one, the surface only became discoloured. Great importance was given to the thorough removal from the amalgam of all traces of metallic oxides, these being in all cases negative.

In "On Celluloid in Artificial Dentures," Mr. Macleod, after giving the composition and mode of manufacture of celluloid, takes up in detail its application to dental purposes. The preparation of the plaster model on which the blank is pressed, is also treated of.

Dr. Orphoot exhibited at his residence, Fisk's Saliva Ejector, with his own mouth-pieces in action.

In November, 1878, Mr. Brownlie, as a continuation of his investigations into the properties of amalgams, gave a paper

on "A Method of Testing Amalgam and other Fillings by Atmospheric Pressure." The distinctive feature of this novel test for change of form in amalgam fillings is the employment of air to detect and measure the extent of any fault in the contact of the filling with the walls of the cavity. The test was one of extreme delicacy, while the apparatus devised is exceedingly simple. As accounting for the occasional success of fillings formed from very bad alloys, Mr. Brownlie showed them that by so shaping the cavity so as to have a more or less marked constriction towards its lower end or centre, and giving it a funnel-shaped mouth, a perfectly air-tight filling was the result.

Supplementary to the paper, the result of several experiments to ascertain the cause of the occasional protrusion of fillings from cavities of decay is given as showing that it was due to the retention of softened dentine on the floor of the cavity.

In 1879 we had a discussion on Dr. Flagg's "New Departure," initiated by Mr. Campbell, and at the Annual Meeting Dr. Williamson (Aberdeen), gave a paper on "Retarded Eruption," which was illustrated by many very interesting specimens of impacted teeth, dentigerous cysts, the more or less permanent retention of temporary teeth, and the non-development of permanent.

1880 was begun by a discussion of "Irregularities and their Treatment," the initiative being by Mr. Campbell. At the Annual Meeting there were two papers, one by Mr., now Dr., Leslie, "Notes of a Demonstration on Comparative Dental Anatomy," a very interesting, instructive, and well illustrated paper, the examples being chiefly taken from the Monotremata and Marsupialia. The other was "On the Behaviour of Plaster of Paris during Setting," by Mr. Macleod, in which attention was drawn to the warping of plaster (in certain circumstances) during setting, and pointing to this as the probable cause of the otherwise unaccountable occasional inaccuracy in models, and so of failure to secure a perfect fit to the gum. He strongly advised the constant employment of a weak solution of potash alum as a means of securing comparatively rapid setting, and so reducing the risk of such warpage to a minimum. I may add that this paper assisted in considerably extending the practice of taking plaster impressions.

Dr. Williamson opened the session 1880-81 by a paper on "Nitrous Oxide as an Anæsthetic Dentistry," taking up the progress made in its preparation, mode of administration, &c., since Mr. Fox's paper in 1868.

(To be continued.)

ANÆSTHESIA.

By KENNETH McALPIN.*

MR. PRESIDENT AND GENTLEMEN: Anæsthesia is a subject of such wide compass that to treat of it to its fullest extent would take up more time than we have at our disposal, and I am afraid would be more than my capabilities are equal to. It is also a subject that there is a great diversity of opinion about. For instance, you hear of one anæsthetist administering nothing but ether if he can help it, because he is certain that it is the safest; and another will declare that there is no safer anæsthetic than chloroform for long operations. And so it will be found that for every different kind of anæsthetic there is sure to be some one who considers it to be the best and safest.

Anæsthesia has been practised more or less perfectly from the earliest times, for we read of the ancients using Indian hemp (*canabis indica*) either by inhaling it or taking it direct into the stomach. This was said to produce insensibility or indifference to pain.

Various other methods have been employed to produce anæsthesia since then, until Priestly made his well-known discoveries. Attempts have been made to annul the pain of extraction by passing an electric current through the tooth about to be extracted. The ether spray has also been tried for minor operations, also compression of the cutaneous nerves. But all these three have been found to give as much inconvenience and pain to the patient as having the operation performed without the aid of any anæsthetic at all.

The anæsthetics now used are chloroform, ether, nitrous oxide gas, bichloride of methylene, bromide of ethyl, monochlor-ethylidenchloride and monochlor-ethylenchloride; besides the various mixtures of chloroform, ether, and alcohol.

Anæsthesia is a state of paralyzation of the sensory nerves, with insensibility or complete stupor, caused in some manner not explained yet by the venous condition produced in the blood.

When an anæsthetic is being administered, the administrator and operator should endeavour to keep out of the patient's sight, as far as is consistent with the proper administration, during the state of semi-consciousness, as the quieter the patient's mind is the more speedily will anæsthesia be produced. Also the patient should not be prevented moving any of his limbs as long as he does not attempt to take off the face piece, or otherwise incommode the administrator, as his movements are generally attributable to dreams, and, if

* Read before the Students' Society.

let alone, he will simply make the motion he desires and then remain quiet again; whereas if any attempts be made to restrain him, he will struggle to attain his end, until complete anæsthesia has been produced. The operator should have at hand all instruments that he will want during the operation, and all instruments that he thinks he might want. In cases of extraction he should decide upon what course he is going to pursue. In making this decision he should decide to take out the teeth that give the patient most trouble first. After he has removed these, he should next take into consideration the way the blood will run, so will next take out any stumps that are to be removed, as they generally do not bleed so much, and it is more difficult to see their edges; then he should take out all the back ones before the front ones. He should also remove from the mouth all the teeth he has extracted unless they adhere to the gum, in which case they can be removed after the patient has recovered consciousness, as then there is no fear of them slipping into the larynx and causing asphyxia.

Especial caution should be observed when administering an anæsthetic to a patient with a weakened heart's action. It is most dangerous when patients have fatty degeneration of the heart.

To patients under five years of age and over sixty, chloroform should be given for long operations; for short operations nitrous oxide gas may be given. For any other patients any anæsthetic may be used. No food should be taken for at least four hours before administration, and when taken it should be finely minced or taken in the liquid form, so that it may be thoroughly digested, otherwise vomiting is likely to ensue. Anæmic patients should be specially prepared by taking tonics and nutritious diet for two or three days beforehand, as it is found that fatal cases mostly occur in such patients.

Small doses of ether or chloroform should be administered to patients who have taken an anæsthetic badly on former occasions, to get them accustomed to the drugs. Yet it must not be inferred that, because patients are likely to take it badly again, that those who have taken it well before are sure to do so again, as they may have become weakened by disease, or an alteration in their habits of life changed their constitution.

One very great precaution that ought to be observed is to see if the patient is wearing an artificial plate. If this be the case, he should be directed to remove it, as they are apt to become detached, and cause asphyxia by falling into the larynx.

(To be continued.)

British Journal of Dental Science.

LONDON, DECEMBER 15, 1883.

DENTAL EDUCATION IN ENGLAND.

IN our last article we hinted that there were many abuses in at least the results of our educational systems. Men are not willing always to consider old abuses, their patience flags unless they can peruse some truculent diatribe against some "hideous perversion of justice," or some "crying evil." To use a colloquialism, they want their literary food highly spiced. But we insist with due deference to even the most stay-your-hand-view of the things which be, that the time has come when the profession must set itself not only to see the unsavoury things which its name has to cover *willy nilly*, but must also recognise that these unsavoury things are but the natural outcome of the present plans of our educational system, and the existing mode of granting licenses to practice.

We allow that the word education is "stale," but we cannot the less insist upon the fact that it is oftenest in the so-called "stale" subjects, that we find the greatest novelty.

Let us examine any collateral branch of medicine or surgery, and see whether in any case we find Specialists who practice their own branch of the profession without having passed through the full curriculum. It may be said, how can the study of the very intricate theories as to brain localisation help the practical gynecologist? And yet he runs the risk of being rejected, should he fail to satisfy a testy examiner who may have "gone in for" this modern phrenology. Without wishing to strain the position we believe both the gynecologist and the dentist would be better fitted for their work were they well up in even recondite medicine.

You cannot understand the *motor areas* of Hitzig and Ferrier unless you have personal acquaintance with the human brain. What it comes to is this, there should be just so

much preliminary general surgery and medicine taught as will enable a man to have a strong and trustworthy foundation upon which to erect the superstructure which consists of an accurate theoretical and practical acquaintance with his special subject. As it is now, it [seems really to rest with the individual, or rather with his advisers and his circumstances. There are many who now, in their full swing of a busy practice, bitterly regret that they did not pass this same surgical curriculum before they espoused the branch subject of dental work.

There are very many who, either themselves are better informed or advised by more enlightened and liberally-minded members, have adopted the course we vindicate, and so hold either the F.R.C.S. or M.R.C.S. of England, besides the special dental diploma. But should this not be the rule? Should not aspirants be told that it was necessary they should enter the same lists as the general practitioner, and having with him conquered the not insuperable difficulties of a qualifying surgical examination, they should acquire the special knowledge desirable to the end that they may be skilled dentists?

This is not levelling down, as we are sometimes rebukingly told, it is levelling up. There is no fear that were such a course generally adopted, no small-fee men would survive. Even were every dental surgeon who possessed a genuine surgical diploma so elated as to class himself among his betters, his folly would soon find itself and its possessor a level, and a low one. The examinational test is not the life test; he who scintillates in the one, often becomes totally eclipsed in the other. It may be necessary to make students evince a certain standard of merit before they are permitted to compete for the stakes offered in the race of life, but it must be clearly understood that such standard of merit as measured by examinational tests, can offer no guarantee of success in life.

The man who is the fittest must survive among his fellows, impose what tests you please; but it is desirable that among the ruck some should not survive. If a sterner curriculum deterred some good students from entering the ranks, be sure

that the increased practice which such a reformation would bring in its train would determine many to become dental surgeons.

On the other hand, we must consider the truth of yet another and really practical difficulty. It is this: in many villages and small towns, if a dentist can exist at all, it must be upon small fees—and not too many of these. Not much science, or indeed expertness in practice is required, or even looked for, and the services rendered are not considered over and above what a very small fee can recompense. We admit the force of this argument as far as it goes, but it is almost too trite to answer. Adam Smith, and generations before him, have shown that the demand controls the supply, so that the laity, although they do not appear to support the reform we are urging, in reality not only support it, but even necessitate it. The very reason why the unskilled dental practitioner barely lives, is because his clients—at least, such of them as can afford it—take themselves and their big fees to the nearest town which contains a really skilled practitioner. Had No. 1 been skilled, it needs hardly the telling that the more remunerative work would have remained in his hands.

TOOTH BRUSHES: WHAT THEY SHOULD BE, AND WHAT THEY SHOULD NOT BE.—People usually select wrong tooth brushes. They are either too large or too hard. The usual aim is to “scrub” the teeth, but this is utterly wrong—the practice is pernicious and completely fails to cleanse the teeth, and remove food *débris*. People usually brush from side to side—*against the grain*—as it were. This custom tends to brush all the remains of food, &c., into the spaces between the teeth, where they rot and breed micro-organisms. The brush should be soft, should possess long vibrissæ and a long handle. It should be used *from* the gums towards the free end of the teeth, *i.e.*, downwards in the upper jaw, upwards in the lower. As to mouth-washes and dentifrices, they are mostly catch-penny impostures and most deleterious. Plain soap and plenty of water are best. Some people clean their teeth too often, some too seldom. *Clean* them before sleep and upon rising, *wash* them after meals, and if possible end the meal with a

stiffish crust—is very sound advice which a German contemporary gives his readers.

COLOURING OF ARTIFICIAL TEETH.—A great desideratum is a really good and trustworthy method of tinting artificial teeth. The “Zahntechnische Reform,” states that the usual colouring matters employed for painting upon porcelain have been proposed for this purpose, but that its experience of the baking in these colours has only brought disappointment. There is clearly an opportunity for enterprising youth in this direction.

DENTISTS’ FEES IN FRANCE.—In a very fair and sensible article, a member of the “Société Syndicale Odontologique de France,” after complaining that the public are only too ready to complain, adds, “with a blush,” that some Dentists pillage their clients. Our author goes on to propose a fixed tariff as follows:—

	Francs.
For consultation	20
„ extraction	20
„ do. with nitrous oxide	40
Honorarium for the administration of the gas	20
Simple gold filling	20 to 50
Stopping—amalgam, &c.	20
Pivoting	50 to 100
Artificial teeth on plate	50 to 100
Do. do. (two)	80 to 150
Do. do. (three)	100 to 200
Do. do. (complete set)	400 to 1500
Dressing	10 to 20
Repairing a plate	50 to 100
Each sitting for adjusting plate, altering line of pressure, &c.	20

THERAPEUTICS OF CHLOROFORM WATER.—Dr. Beurmann, writing in the “Gazette Hebdomadaire de Médecine et de Chirurgie,” strongly recommends this drug. He employs it for the nausea and pain arising from dilated stomach, and as a topical application in buccal hyperæsthesia starting

from dental neuralgia. He used equal parts of saturated chloroform water and distilled water, or aq. chloroformi, aq. aurant. flor. aa, with half the quantity of syrup of morphia. We need hardly add such prescriptions should be employed with discretion.

SCRAPS OF HISTORY.—In 1728 there appeared the first Manual of Surgery which treated of special operative measures upon the teeth. At this time the remunerative occupation of Dentist was tacked on to the surgeon's duties. But shortly after great changes occurred. Stopping was introduced—lead being exclusively employed. The use of lead was interdicted in Prussia in 1816, from the amount of chronic plumbism which its employment entailed. During the 18th century, the manipulative practices were much the same as in the commencement of the present century. Teeth were cut out of walrus tusks, or "snatched" from cadavers and mounted in gold, silver or boxwood. At one time the poor but able-bodied, who possessed good and sound grinders, would turn an honest penny by having their teeth extracted, that they might fill the gaps which age or high living had made in the jaws of the proud and rich! Thus Jullion states, in a work which saw the light in 1781, that a tooth taken from a living man, cost 110 marks! One taken from a corpse, 45 marks! While a complete set cost 1,500 marks. This was in the "good old days!"

PAINLESS DENTISTRY.—M. Paul Bert introduced to the notice of the Académie des Sciences of Paris what he would seem to have regarded as a novel procedure. This fresh departure in tooth avulsion owes its origin to a Genevese Dentist, and consists in forcing the condemned tooth through a perforated piece of India rubber to such an extent as to expose the root. In four days or so the contraction of the rubber has effected the enucleation of the tooth, and this end is achieved without bleeding, and we are assured by M. Bert, without pain or inconvenience. M. Galippe, speaking on the subject, very justly remarked, this method, whatever merits it may claim, cannot be considered novel; in fact it has been known in a vague way for years. But we believe the practice has never been seriously carried

out to any extent in England. Perhaps some of our readers have cases in which it might be tried with advantage.

IODOFORM IN DENTISTRY.—A. B. Harrower, writing in "Dental Cosmos," says:—Four years ago I was a student of the Philadelphia Dental College, and listened to lectures about the use of iodoform in Dentistry, special attention being directed to its use in the treatment of pulpless teeth, and the following formula was used to cover its odour:

R	Iodoform	.	.	.	gr.x
	Tannic acid	.	.	.	ʒiij
	Glycerin	.	.	.	ʒxv

Rub the iodoform to a flour in a small mortar, add tannic acid, mix well, and then add the glycerine. Further, he adds, a drop of oil of cinnamon will *entirely* disguise the smell, and insists upon the fact that age makes iodoform less offensive in odour.

CAN NEURALGIA CAUSE MANIA?—At a recent meeting of the New York Odontological Society, Dr. Jarvie related particulars of a case under his care. The young man had delusions, was suspicious, and manifested the usual maniacal symptoms. Dr. Jarvie found he had a left superior bicuspid filled with gold. Upon removing the filling it was evident that an unsuccessful attempt had been made at pulp capping. In a molar on the other side was "an immense amalgam filling, apparently well put in." The pulp in both cases was dead to the roots—odour bad, but no pus. Dr. Jarvie had had immense trouble with dealing with the case, and finally removed all fillings. After this the patient became very much quieter, and slept better. Dr. Jarvie refrains from doing more than suggesting a possible causal relation between the teeth and the mania. In nervous systems overstrung it is not difficult to understand that any peripheral nerve lesion should initiate an attack of mania.

PARISIAN CRYSTAL GOLD.—The advertisements have hit upon the happy expression, "Le merveilleux." But what is it? Well, it looks like our old friend Schwamom gold. This, however, is more fibrous, and is very tough in its spongy

form. If not crumbled by the fingers it can be torn or cut with a sharp knife, and if heated the pieces weld together. It is very cohesive, and seems useful for fillings. In colour it resembles galvanic beaten gold, but on being polished it resembles the genuine precious metals. Continental contemporaries differ in their opinions, some speak highly of it as filling, others do not scruple to use very qualified praise.

WHAT LADIES EXPECT FROM DENTISTS.—An amusing *tu quoque* appears under this title in the "Dental Advertiser." A previous writer had ventilated his views upon what "Dentists expect of ladies," and so one of the afflicted fair takes up the quill and inform us that she and her sisters expect certain things at our hands. We think the writer's animadversions, as far as they apply, are just and sensible. She says, to wait for an hour or so is an evil, but bare consulting rooms, either too hot and stuffy, or too cold and draughty, are worse. To find the table covered with Dentists' periodicals is adding insult to injury. Nor does a post office directory, or a blue book for the year 1860, mend matters. A few serial illustratèd's, and paper and pens for correspondence are easily obtained, and such trifles add materially to a would-be consulter's comfort. All this seems very rational, and may point a moral on this side of the Atlantic.

INFLUENCE OF DIET UPON THE TEETH.—All entisteds recognise the paramount importance of the nature of the food when considering the hygiene of the teeth. The "Food Reform Society"—of which one hoped many things—seems likely to disappoint its too confident supporters. In lieu of reforming, the society has practically identified itself with vegetarianism, and so has accepted an ill-substantiated dogma instead of critical research. We all recognise that in our badly regulated dietary, our excesses and our over-stimulation of the gastric mucous membrane, we possess a cause ready-made for dental disorders of all kinds, and we should be deeply indebted to any body of cultivated men who would philosophically determine rational health dietaries. But we cannot consent to be led by the nose by the scatter-brains who, in spite of physiology, attempt to foist upon us an exclusive diet, be it flesh or be it vegetable. All extremes are bad.

Manipulative Miscellany.

All instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month; they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits, and without any intention or wish to put one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

ASH'S ADJUSTABLE OR REGULATING BATTERIES, FOR THE ELECTRIC MOUTH-LIGHT, MALLET, ETC.

No. 1.—A small compact battery; size, 16in. by 13in. by 6in., fitted with ratchet wheel, &c., by which the strength of the electric current may be regulated at will, thereby economising the power of the battery. It is fitted with three cells, each cell containing nearly three pints of solution, and we believe it to be a more powerful battery and one that will give a current longer than any bichromate battery of the same size. The zinc plates are thoroughly amalgamated, and fitted in such a manner that they can be easily renewed when necessary. There is, we understand, no unpleasant smell with this battery.

No. 2.—This battery is much larger and more powerful than No. 1, and is fitted with a regulating handle, which serves as an index to show the strength of the current that is being used. It is also fitted with two sets of terminals by which the mallet and the light can be used at the same time, or separately, without interference with the arrangement of the battery. A small push or button is fixed at the front of the box, by pressing which the carbons and zinc plates are lifted out of the solution by a balance weight. This is a very simple and effective way of economising the lasting power of the battery, as no action can go on when the battery is not in actual use.

RITCHIE'S ZINC HAND SPITTOON.

MR. JOSEPH RITCHIE has introduced an ornamental form of hand spittoon, in zinc, japanned to imitate Majolica, measuring 9½in. by 7in. The spittoon hole is smaller than in the ordinary nickel plated and other hand spittoons, preventing the contents from running over in case of a fall.

MR. RUTTERFORD'S STUMP FORCEPS.

MR. RUTTERFORD has a new shape of stump forceps, which have the advantage of straight handles, although from their special bend near the circular joint the blades can well reach the fang of a wisdom tooth, even if the second molar be standing. They are light and sharp in the blades, and although intended mainly for upper roots, may be readily used for lower on occasions of emergency, or to economise time, as for instance in operations under nitrous oxide.

Dental News.

BRITISH DENTAL ASSOCIATION.—MIDLAND BRANCH.

A Special Meeting of the Midland Branch of the British Dental Association was held at the Medical Institute, Birmingham, on Saturday afternoon.

Mr. ROFF KING, L.D.S., the President of the Branch, occupied the chair; and there was a large attendance, including Messrs. J. Harrison (Vice-President), S. Wormald, Dr. Waite, E. H. Williams, H. Blandy, J. Renshaw, J. S. Crapper, Bennett May, S. Bate (President of the British Dental Association), Smith Turner, Dr. Sawyer, C. Sims, F. R. Batchelor, J. Parkinson (London), F. Canton (London), Dr. St. G. Elliott (London), R. F. H. King (Newark), T. Cook Parsons (Clifton), Adams Parker (Birmingham), William J. Watson (Birmingham), F. E. Huxley (Birmingham), B. Neale (Birmingham), W. Shillinglaw (Nottingham), J. W. Roberts (Dudley), Billcock, W. Helzar (Bristol), Baines, T. Bowman Macleod (Edinburgh), R. Rogers (Cheltenham), F. W. Richards, &c., &c.

Letters of apology for non-attendance were read from the Mayor (Alderman Cook), Professors Tilden and Haycraft, and Mr. R. Chamberlain.

Papers were read by Mr. Bennett May, upon the "Diagnosis and Treatment in certain Diseases of the Mouth and Jaws interesting to the Dental Surgeon;" by Mr. J. W. Roberts, "Is Tobacco Injurious to the Teeth?" and by Mr. J. Humphreys, "On a Case of Fracture of Upper Maxilla and Replantation of Permanent Lateral."

A discussion took place upon each of the papers, and a vote of thanks was accorded to the readers.

There was also an exhibition of dental novelties and instruments, microscopical objects and specimens.

In the evening a dinner took place at the Grand Hotel, at which Mr. Roff King presided.

In proposing the "British Dental Association and its Branches," Dr. SAWYER said that the objects of the Association were good and great. He was informed that the British Dental Association was established three or four years ago, and though established so recently had made very considerable progress. He understood that it had for its object periodical meetings of members of the profession in different parts of the kingdom. Another object was the publication of professional and scientific information, and, still further, they sought to promote dental science, and to maintain the provisions of the Dentists' Act. They had also established in connection with the Association a benevolent fund for the support of the poorer members of the profession. The Association numbered upwards of 500 members, and was divided into five branches. He hoped that before long they would include Ireland and Scotland in their operations. Their basis was broad and fair. Any registered dental practitioner of good character, who did not pursue disreputable practices, was eligible as a member of the Association. He congratulated them upon the success which they had already achieved, and wished them progress and prosperity for the future.

Mr. SPENCE BATE acknowledged the toast. He said that Birmingham was, out of London, the first and central city of England. Therefore there was every reason why Birmingham should take the lead in the movement for the promotion of dental science. They had a large medical school around them, and if they pulled together their association would soon be one of the strongest in existence. He thought it was a miserable thing that, with the large number of dentists in the country, they were only able to number 500 members in their association. To his mind the branches were the future of the Dental Association. The association could only live by the branches, and the more branches they could form the stronger would they become. Every man who supported his branch supported the association.

Mr. SMITH TURNER also replied. Speaking of the Dentists' Act, he said that the clause which prohibited one Dentist from prosecuting another for improper professional acts was one which he should be sorry to see wholly destroyed, but he should like to see it modified. They were being constantly called upon to prosecute; but the people themselves who were injured should act for their own defence. He admired the man who could add additional qualifications

to his "L.D.S.," but he believed that if a man was to serve the public truly and well, he must give his whole time to dentistry. It was gratifying to know that the association was making some progress at last. Something had been said as to the benevolent fund. They had committed themselves to it, and were determined to make it a success. There was some talk about the establishment of an Odontological Society in Birmingham. If the Birmingham Society turned out anything like the one in London, he should be delighted. He saw no reason why it should not be successful.

Mr. R. F. H. KING gave "The Birmingham Medical School," to which Mr. BENNETT MAY and Dr. SAWYER responded.

Mr. BLANDY, in proposing "The Town and Trade of Birmingham," gave a brief history of the rise of the town.

Mr. W. UDAL having replied, Mr. ROBERTS submitted "The Odontological Society of Great Britain," which, he said, was started in the year 1856, and followed on the lines of the old College of Dentists. Since its establishment it had exercised a very beneficial influence on the profession.

Dr. WALKER replied, and proposed "The Dental Hospital of Birmingham," which was responded to by Mr. C. SIMS.

THE DENTAL HOSPITAL OF LONDON, LEICESTER SQUARE.

PRESIDENT.—H.R.H. THE DUKE OF CAMBRIDGE, K.G.

SPECIAL APPEAL.—A Special Appeal is made on behalf of the Dental Hospital of London, which has now for upwards of a quarter of a century afforded relief to poor persons suffering from dental diseases, from whatever district or locality they may come, whilst also as a medical school it affords instruction to those intending to devote themselves to this branch of the healing art, thereby benefiting all classes.

During the first year of its existence the hospital relieved about 1,000 patients, and so rapidly has the demand upon it increased, that last year upwards of 35,000 cases were treated, a large number being operations performed painlessly (under anæsthetics).

Want of sufficient accommodation and funds have for some time compelled the Committee most reluctantly to limit the usefulness of the institution, but the opportunity now advantageously offered for increasing their accommodation in the acquisition of adjoining premises—the Tower Block—the

generous gift of their munificent supporter, Sir Edwin Saunders, emboldens them to make a special appeal to the benevolent public for funds necessary for adapting and fitting up the New Wing, and for redeeming the mortgage of £5,000 on the present Hospital Building, which presses so heavily upon the institution, and materially curtails the benefits they would otherwise be enabled to confer upon the suffering poor.

On behalf of the Committee of Management,
J. FRANCIS PINK, *Secretary*.

PROPOSED MIDLAND DENTAL SOCIETY.

A MEETING of dental practitioners residing in the Midland Counties will be held in Birmingham, at the Birmingham and Midland Institute, on the 12th January, to elect officers, arrange for meetings, and other business of a preliminary nature, in connection with the formation of this Society. Arrangements have been made for operative and mechanical demonstrations, and among others Mr. A. B. Verrier has promised to exhibit the working of his furnace, and show his method of continuous gum work on either plate, rubber, or celluloid, and practically demonstrate and fully explain this beautiful work.

We hope to publish further particulars as to the arrangements in our next issue.

APPOINTMENT.

A. S. UNDERWOOD, M.R.C.S., L.D.S., has been appointed Lecturer on Dental Anatomy and Physiology to the Dental Hospital of London, *vice* C. S. Tomes, M.R.C.S., L.D.S., F.R.C.S.

ROYAL COLLEGE OF SURGEONS' MUSEUM.

We are requested by Mr. Alfred Coleman to acknowledge the receipt of other contributions to the above from Mr. A. P. Reboul, Islington, and Mr. R. Giles Bradshaw, London. Further contributions will be thankfully received.

Want of space compels us to postpone several interesting communications—letters and other matter—till a future issue.

MONTHLY REPORT OF CASES TREATED AT THE DENTAL HOSPITAL OF LONDON.

FROM NOV. 1ST TO NOV. 30TH, 1883.

Extractions	Children under 14	432
	Adults	849
	Under Nitrous Oxide	417
Gold Stoppings		161
White Foil ditto		8
Plastic ditto		846
Irregularities of the Teeth treated mechanically		188
Miscellaneous Cases		185
Advice Cases		90
Total		3176

J. O. BUTCHER, *House Surgeon.*

MONTHLY REPORT OF CASES TREATED AT THE NATIONAL DENTAL HOSPITAL, FROM NOV. 1ST TO NOV. 30TH, 1883.

Number of Patients attended	.	.	.	.	.	1534
Extractions	{	Children under 14	.	.	.	419
„		Adults	.	.	.	820
„		Under Nitrous Oxide	.	.	.	272
Gold Stoppings	.	.	.	.	.	91
Other Stoppings	.	.	.	.	.	390
Advice and Scaling	.	.	.	.	.	241
Irregularities of the Teeth	.	.	.	.	.	75
Miscellaneous	.	.	.	.	.	170
Total	.	.	.	.	.	2478

CHAS. W. GLASSINGTON, *House Surgeon.*

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 82, Mortimer Street, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
3. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
4. All communications relative to subscriptions and advertisements are to be addressed to the Publisher, Mr. J. P. Segg, 82, Mortimer Street, Regent Street, London, W.
5. The Journal will be supplied direct from the office on PREPAYMENT of subscriptions as under:

Twelve Months (post free) 14s. 0d.

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LONDON, JULY, 1883.

ABSTRACT OF A CLINICAL LECTURE BY
DR. MAGITOT ON THE ANOMALIES IN THE ERUPTION
OF THE TEETH IN MAN.

THE anomalies in the eruption of the teeth are, as is well known, usually met with under one of the following forms:—

1. Congenital absence.
2. Early eruption of the milk teeth.
3. Late eruption of the permanent teeth.

The first form, *congenital absence*, may be divided into two varieties, the partial or total absence. The latter form has as yet never been met with, except as a sequel to grave lesions of the maxilla. The former, however, is frequently seen, and occurs as the result of the congenital absence of certain tooth follicles, or of the compression they are subjected to under certain circumstances. As an instance of this last variety may be mentioned the absence of the lower wisdom tooth, which is wanting in many persons. This form of anomaly does not, however, present any practical interest. The same cannot be said of the two other forms, *the early eruption and the tardy eruption*. The appearance of the teeth at, or very shortly after birth, may be accompanied by a series of accidents necessitating medical aid, as in a case previously reported by myself, in which the extraction of two teeth, cut on the second day after birth, was followed by intractable hæmorrhage, and by the death of the child. On the other hand, the eruption of teeth at an advanced age is often attended with grave complications: compression of the dental arch, abscesses, tumours, &c. The two following cases, which occurred recently in my private practice, appear to me to be of sufficient interest to be recorded.

I. *Premature eruption in a new-born child.*—Case. Two lower middle incisors cut at birth; extraction; incontrollable

hæmorrhage; death. Mrs. X., primipara, well developed woman, was delivered on the 7th of December, 1882, of a strong, healthy-looking male child, weighing seven pounds. On the very day of its birth the midwife noticed that the child bore in the centre of the lower gum two small teeth, which were very loose. Without asking the medical attendant's advice she pushed them out with her finger, very easily, she says. Hæmorrhage set in during the night. At first it was quite superficial and very slight. It increased, however, and notwithstanding every means employed to check it: compression, applications of alum, plugging, perchloride of iron, and finally the actual cautery. The hæmorrhage continued for six days, when the child died perfectly exsanguine.

The first point to be considered in these cases is the interpretation of the premature eruption of the teeth. Have we to deal with early supernumerary teeth or with preternaturally early milk teeth? There can, I think, be no doubt in the matter. These teeth form part of the normal dentition; for if they happen to fail from any cause whatever, their places remain empty during the whole of the first dentition. It is therefore a great mistake to look upon these teeth as superfluous and useless, and upon their removal as attended with no evil results.

I venture to assert again—

1. That no interference of any kind should be allowed in the case of the early eruption of milk teeth.

2. That in most cases these teeth may and do regain a certain degree of firmness, notwithstanding the short size of their roots.

3. That the only serious inconvenience caused by them is the difficulty in nursing and that this may be remedied by the use of artificial teats.

4. That a sufficient reason for abstaining from any surgical interference is the possibility of accidents, and especially of fatal hæmorrhage.

II. *Late eruption in the aged.*—Case: Appearance in a woman, aged 76, of a tumour in the palate, of doubtful nature at first; intense and persistent neuralgia, permanent canine, which had never been cut, appearing in the centre of the tumour; sudden cessation of all symptoms.

Mrs. B., aged 66, informs us, that about ten years ago a small, hard indolent tumour, appeared in the centre of the roof of the palate. She was wearing at the time an artificial set of teeth, and the swelling being thought to depend upon this, an incision was made into it. The tumour went on increasing, however, and soon gave rise to violent and persistent neuralgic symptoms in the infra and supra orbital and temporal regions.

No surgical measures were taken, though the tumour was at this time considered to be a chronic abscess in the vault of the palate. No internal remedies proved of any avail.

Two years ago Mrs. B. noticed that in the centre of the tumour in the palate, which had now increased to the size of a large nut, a sharp, hard point could be felt by the tongue and finger; and also that the neuralgic symptoms had passed off ever since its appearance.

On looking into the mouth it was easy to make out the existence of a partially erupted crown of a canine tooth, projecting about one line and a half beyond the mucous membrane, and lying to the right of the median line, a little more than one inch behind the alveolar border.

Mrs. B. having lost all her teeth more than ten years previously, she was thought to be an example of tertiary dentition; but on carefully cross-examining the patient, it was found that at the time of the completion of her secondary dentition (between eighteen and twenty) a distinct space had remained between two of the teeth on the right side only, the arch being quite complete on the opposite side. We had evidently here to deal then with a permanent canine tooth which had failed to make its appearance at the proper time, and was cut at this advanced period of life.

This case bears out the opinion which I expressed in a former paper, that all these instances of the eruption of teeth at an unusually late age may be explained by the tardy eruption of normal teeth, and that the existence of a third or fourth dentition is anything but proved.

I have but very little to say regarding the practical bearings of this case. No surgical interference appeared justifiable in the present instance, owing *first* to the possible dangers of such a course; *secondly*, to the difficulties attending the removal of a partially erupted palatine tooth; and *lastly*, to the absence of any troubles of any kind.

ON A CASE OF SPONTANEOUS CLOSURE OF CLEFT PALATE.*

By P. J. THOMSON, M.R.C.S. Eng. and L.R.C.P. London.

A CASE of this kind was shown at a meeting of the Berliner Medincinische Gesellschaft, last year, by Dr. Wolff. The subject of this very rare form of case was a boy aged 13. His voice had the usual nasal character met with in persons with congenital cleft palate. On looking into the mouth, instead

* Will be published in *extenso* in Aug. 1st issue of the "*British Journal of Dental Science*."

of finding the expected cleft, a well-shaped palate was seen, which showed, however, the following unmistakable signs of a former spontaneously (perhaps in utero) closed cleft, irregular position of the upper incisor teeth, bifid uvula, cord-like cicatrix in the middle line of the involucrum palati duri, together with a swoollen fold lying immediately to the left and parallel with the cicatrix; the continuation of the cicatrix through the soft palate to the wide uvula in the form of a fine white line, which could be easily felt, but could only be seen on careful inspection; finally through the closed fissure could be felt a separation of the hard palate in the form of an equilateral triangle, situated in the middle line, with its base looking backwards; lastly, a fissure about $1\frac{1}{2}$ cent. long in the horizontal part of the os palati, and the posterior part of the palatine process of the superior maxilla. On passing the finger behind the velum, the vomer could be felt to be deficient in the posterior portion, and the choænas to be wanting in their natural division. The upper lip was of a normal shape but exceedingly short.

Dr. Wolff stated that he had only met with five similar cases in the course of his readings. In his remarks on the bearings of this and similar cases on the results of urano plastic and staphyloraphy, Dr. Wolff pointed to the fact, that even in the cure by nature herself, which takes place without any wounding of the borders, so without any loss of substance, without any hæmorrhage, or any cicatricial contraction, the voice always retains its abnormal character. No form of operation was likely to give such favourable results, for in every one some portion of tissue must be sacrificed, and in most of these cases it was already very deficient. Thus surgeons could hardly expect to obtain satisfactory results except by a combination of operative measures, and the subsequent prothesis by means of soft obturators. This last form of treatment he intended to carry out in the present case.

(To be continued.)

ADDRESS DELIVERED AT THE DISTRIBUTION OF
PRIZES TO THE STUDENTS OF THE DENTAL HOSPITAL OF
LONDON MEDICAL SCHOOL, MONDAY, JULY 2ND, 1883.

By CHRISTOPHER HEATH, F.R.C.S.

LADIES AND GENTLEMEN,—I have great pleasure in presiding here to-night, not merely because it is pleasant to see diligence rewarded and to take part in helping the student forward on his way, but because I have the honour of being

connected (as Consulting Surgeon) with the hospital where the excellent instruction is given of which we see the fruits to-night, and have always taken great interest in matters connected with the Dental profession. If I may be allowed to intrude a few autobiographical details, I may venture to mention that my grandfather, after serving as a surgeon in the Royal Navy, commenced practice as a Dental Surgeon in this city early in the century, and that my father and three uncles followed his example, which is maintained in the present generation by my brother, and was very nearly so by myself. It is not very surprising then that I should have turned some of my attention to surgical matters relating more or less closely to the art of Dentistry, and thus have been pleasantly brought into close contact with many members of the Dental profession. And what a different profession now from what it was in my grandfather's or my father's time, and even within my own recollection! If we surgeons can go back to the days when the Corporations of the Surgeons and Barbers were united, you need not be offended at anyone tracing your origin to the blacksmith; but now, when the education for the Licentiate in Dentistry approaches so closely as regards scientific requirements the curriculum demanded for the Membership of the Royal College of Surgeons, it would be affectation in surgeons to regard their Dental brethren as standing on a lower platform than themselves. A most convincing proof of the scientific estimation in which Dental Surgery is now held was given two years ago, when, at the International Medical Congress which met in this city, the very active section of Dental Surgery, under the able presidency of Mr. Saunders, contributed its full quota to the success of the meeting; and still more recently the Council of the Royal College of Surgeons, of which I have the honour to be a member, has conferred upon one of the leaders of the Dental profession the unsought honour of its Fellowship, coupling the name of Mr. John Tomes with that of Professor Huxley, as representative men of science worthy of especial regard.

But the changes in the Dental profession are not confined to its scientific aspects. It is in its social relations that the profession has undergone so marked an alteration. Fifty years ago there was no union, no intercommunication of thought, no interchange of ideas. "Every man for himself" was the order of the day, and the details of practice were regarded as "trade secrets," to be jealously guarded, and on no account made public. Contrast this with the present time, when there are flourishing Odontological Societies, both in London and the provinces; when three Dental journals vie

with each other in bringing forward novelties in practice; and when the members of the Dental imitate the example of the medical profession in making their discoveries and inventions known. Surely these are matters for congratulation no less than the higher estimation in which the Dental profession is held by the public at large, thanks to its greatly improved scientific standing. I really am not sure whether I ought to congratulate the Dental profession on its recognition by recent Parliamentary legislation or not. Registration under the Act of 1878 is, I suppose, the first step towards the enforcing of a Dental diploma in the future, and must be compared with the provisions of the Apothecaries' Act of 1815, which recognized everyone in practice at that date. But let me warn the younger members of the profession against supposing that the mere fact of being registered will bring them practice. The public knows little and cares less about registration and diplomas, but it can appreciate skill, professional knowledge and courteous bearing, and it is upon these that success depends. Let me then urge upon those who are still in *statu pupillari* to acquire the knowledge which is so essential for their after-career while they can do it so easily and pleasantly to themselves. Let me ask them to make the most of the opportunities which the Dental Hospital affords of acquiring the skill which nothing but actual practice can confer, and without which they will not be able to make their way in after-life. We have been to-night rewarding those who have done best in the classes of instruction, and I am sure we all felicitate them upon their success; but success as a student does not always lead to success as a practitioner, and it is often difficult to say why. Is it possible that prize-getters think they have already conquered their little world, and are content with the laurels they have already won and strive after no new ones? If that be so, then prizes are an unmixed evil, which I should be sorry to believe, although I must confess that I have great sympathy with the men who are not successful as students, and yet who so often astonish their teachers later in life by their success as practitioners. Let me then beg those who have *not* been successful to-night to look forward hopefully and to strive manfully to acquire that knowledge which will serve them in the future, even if they are beaten by their more brilliant brethren in the "trial stakes" of student-competition, in which all cannot win though all may acquit themselves with credit.

Lastly, let me say a word to those who are completing their student career to-night, and to many of whom I have already had the pleasure of addressing a few words of con-

gratulation. Let me ask all of you to think nobly of your profession, and so long as you do that there can be no fear of your degrading it. On the contrary, it must be upon you that, in the future, the welfare of your profession will depend, and if you will follow the example of your predecessors and teachers, men like Cartwright, Rogers, Tomes, and Saunders, who have fought the good fight, of which you inherit the benefit, you will never be ashamed of having been students of the Dental Hospital of London.

ON THE THERAPEUTICAL INDICATIONS IN DENTAL CARIES.

By Dr. E. MAGITOT,

Member of the Société de Chirurgie, Laureate of the Institute; &c.

THIS well-known Dental writer has been publishing, under the above heading, in the "Gazette Hebdomadaire de Médecine et de Chirurgie," a series of very interesting papers on the treatment of Dental Caries.

The author begins by stating that caries in the teeth may be divided into three periods: a. *Superficial*, or caries of the enamel. b. *Middle*, or caries of the dentine. c. *Deep*, or penetrating central caries; the last period being subdivided into three stages, according as the pulp is *exposed*, *inflamed*, or *destroyed*.

Caries is said to be essentially a chemical process in the enamel, but when it affects the dentine it causes an inflammatory reaction, which may be sufficient to bring about a cure, as in dry caries.

1. INDICATIONS AND GENERAL THERAPEUTICAL RULE IN DENTAL CARIES.

Under this heading are considered: 1. *Cure of the diverse accidents caused by caries.* 2. *Preservation or restoration of the organ and the re-establishment of its use.*

In the first place are considered the general rules which should apply in caries in this situation, as well as in any other part of the body,—i.e., antiphlogistics in inflammation, treatment of diathetic or causative diseases, &c., &c. In the second, the general rule of treatment is,—a. *The simple resection of the affected tissues.* b. *The filling or obturation of the diseased cavity.* Both these methods have for their object the *isolation*, that is the removal of the healthy tissues from the different causes of decay.

2. THERAPEUTICAL INDICATIONS IN EACH PERIOD OF CARIES.

A. *Indications in first period.*—The first period, in which

there are only fissures and holes in the enamel, is characterised by the absence of pain. If the carious spot is on the trite-rating surface, plugging should be resorted to at once; if it exists on one of the lateral surfaces, resection by the file, so as to leave a smooth surface, will be all that is required.

B. *Indications in second period.*—This period may be divided into three secondary periods.

(To be continued.)

THE ECONOMICS OF DENTISTRY: AN ATTEMPTED ESTIMATION OF THE RELATION OF PROFESSIONAL FEES TO THERAPEUTIC TREATMENT.

By GEORGE CUNNINGHAM, D.M.D., Havard.*

THE first President of this Society, in his very calm and judicial retrospect of the progress of Dentistry, made the following remarks: "It is most interesting to review the progress of our friends across the Atlantic, whose establishing associations similar to this now inaugurated, resulted in their marvellously rapid progress. Minds met, views exchanged, fraternity sprang up, resulting in generally increased experience. Papers were read by the scientific, and others by the practical, each benefiting the other. This was their great element of success. Their success has been reached by *thoroughness*—thoroughness in every operation, nothing carelessly done, nothing half done. Conservative treatment is their ideal, there are no hasty extractions; troublesome cases are patiently treated, and success usual. What a sad contrast to much that is done in this country! Undoubtedly it is our duty to preserve rather than destroy, and *Dental surgery* will in the future occupy a much more important position than *Dental mechanics*."

As most of you are aware, I have had exceptional opportunities of forming an opinion as to the mode and practice of our American brethren, not only having studied in one of their best schools and also having been engaged in active practice there, but, better than all perhaps, I had exceptional opportunities of witnessing the methods of work by all kinds of practitioners, in New York, Boston, Philadelphia, Albany, and last, but not least, Lancaster, the home of our late lamented friend, Marshall H. Webb, the chief exponent of all that is most beautiful and most artistic in gold filling. It is the habit in America to admit brother practitioners to witness their daily operations at the chair. Having several

* Read at the Annual Meeting of the Eastern Counties Branch, held at Ipswich, on April 11th.

months' leisure on my hands, I availed myself very largely of this custom, and was thereby enabled to pursue a course of instruction, almost unique of its kind, which has proved to be of immense practical benefit, and for which I am deeply grateful. I know that I can best repay the many kindnesses of those who so freely gave, by as freely giving in my turn, and as far as the prejudices of my clientèle will permit, any earnestly enquiring professional brother will find a hearty welcome in my surgery.*

(To be continued.)

SALIVA.†

BY HARRY BALDWIN.

MR. VICE-PRESIDENT AND GENTLEMEN,—We must be interested, all of us, in Saliva, notably because we come in contact with it daily in the discharge of our duties. It is well for us to know as much about it as possible, not only for general purposes, but also, in the case of the majority of us who are students, for a very particular purpose, viz., of satisfying the examiners, should they think well to question us on this subject, at the College. No paper, so far as I can make out, has ever been read on this subject before the Society.

The points I wish to touch on are—

1. Definition of saliva, and description of the glands by which it is secreted.
2. Its physical properties and physical uses.
3. Its chemical composition.
4. Its chemical properties and chemical uses.
5. Circumstances governing its secretion.
6. Manner in which it is secreted.
7. An acid reaction of saliva in health.
8. Effects of disordered states of body upon it.
9. Salivation.
10. Effects on the teeth.

N.B.—*The consideration of tartar I leave out altogether, as we have lately heard a paper on that subject.*

1. DEFINITION OF SALIVA, AND DESCRIPTION OF THE GLANDS BY WHICH IT IS SECRETED.

Saliva is the secretion of the salivary glands. The salivary glands consist of three pairs of large ones and numerous small ones.

The pair of *parotid glands* is the largest of the three.

* The whole of this article appeared in the "*British Journal of Dental Science*," July 2nd and 16th, and it is very interesting.

† Read before the Students' Society of the Dental Hospital of London, June 11th, 1883.

The *submaxillary glands* are intermediate in size and the *sublingual glands* are the smallest.

Each *parotid* (so called from its proximity to the ear) is situated at the back part of the cheek in front of and below the lower part of the ear. The zygoma limits it above and the angle of the jaw below. It extends in from the ear to about one-third of the distance between the ear and the corner of the mouth. It has two processes, given off from the body of the gland, one of these runs deeply into the neck behind the styloid and mastoid processes of the temporal bone and beneath the sterno-mastoid muscle. The other process projects into the back part of the glenoid fossa. The highest part of the gland, just below the zygoma, often exists as a separate lobe and is called "*socia parotidis*." The duct of the parotid gland, *Steno's duct*, leaves the gland by its front border and opens into the mouth opposite the second molar tooth of the upper jaw. Steno's duct is about $2\frac{1}{2}$ inches long. It is placed a finger's breadth below the zygoma. Its course is nearly horizontal. In its passage from the gland to the mouth, it first runs along the external surface of the masseter muscle, then it pierces the buccinator muscle, after which only the mucous membrane separates it from the mouth. It pierces the mucous membrane obliquely and its orifice in the mouth is on the summit of a small papilla. Near its commencement it receives a tributary from the *socia parotidis*. The canal of the duct is about the size of a crow-quill. The parotid gland, when dissected out, weighs from $\frac{1}{2}$ to 1 oz. Some large arteries, veins and nerves, pass through it. The arteries which, in part, pass through it, are the external carotid, the temporal, the internal maxillary, the transverse facial and the posterior auricular. The veins are a trunk formed by the junction of the temporal and internal maxillary, and a branch which connects this trunk with the internal jugular vein. The facial nerve (portio dura of the seventh) immediately after leaving the brain, through the styto-mastoid foramen, enters the parotid gland and branches out in its substance, in a manner which has given it the name, at this point, of "*pes anserina*," or goose's foot. These branches emerge at the front border of the gland. The great auricular nerve also pierces the gland and joins the facial in its substance. The internal carotid artery and internal jugular vein do not pierce the gland but lie close to its deep surface. There is nothing covering in the gland but skin and fascia, and one or two lymphatic glands. One or two lymphatic glands are, by the way, imbedded in its substance. The arteries which supply the parotid gland with blood are branches from the external carotid. The nerves supplying it are derived from five sources, viz., branches from

the carotid plexus of the sympathetic, branches from the facial nerve, the superficial temporal, the auriculo-temporal and the great auricular nerves.

(To be continued.)

ON THE BEHAVIOUR OF ARSENIC IN CONTACT WITH PUTREFYING ORGANIC SUBSTANCES.

By THOMAS STEVENSON, M.D.,

Professor of Toxicology, Guy's Hospital.

It has now for some time been a well established fact that nitrogenous organic substances, *e.g.*, flesh, give rise during putrefaction to the formation of alkaline or basic substances. Ammonia is the best known of these products. There are, however, other and less known bases or alkaloids, as the organic bases are termed, also produced during decay, *i.e.*, substances formed, as the chemist terms it, on the same type as ammonia. Two chemical bodies are said to be of the same type when they contain the same number of atoms, or groups of atoms (compound radicals), arranged in the same manner. Thus bodies so diverse as water and alcohol are said to belong to the same type, because one of the two atoms of hydrogen contained in the molecule of water in alcohol is replaced by a group of atoms of carbon and hydrogen, known collectively as ethyl; and water and alcohol, regarded in some aspects, have similar chemical properties. Ammonia, abundantly produced during putrefactive decomposition, is itself the type of organic bases (alkaloids), among which are such beneficent substances as quinine, and such destructive bodies as strychnine and aconitine. Trimethylamine, a base which may be regarded as ammonia in which the three atoms in its molecule have been replaced by three groups of the atoms collectively spoken of as methyl. The class of bases formed on the ammonia type, by substitution, are termed *amines*. But not only may the hydrogen atoms of ammonia be thus replaced by such groups of atoms as methyl, but even the fourth atom of the ammonia molecule, nitrogen, may be also replaced by an atom of a different character. Thus by substituting for the nitrogen atom in ammonia and compound ammonia, (amines) an atom of arsenic, a series of basic substances is obtained, termed *arsines*. In this way we have the well-known deadly gas arsenuretted hydrogen (arsine *par excellences*) which is a compound of one atom of arsenic with three atoms of hydrogen, just as ammonia is a compound of one atom of nitrogen with three atoms of hydrogen. Numerous arsines can be prepared by the chemist, and they are frightfully poisonous substances.

(To be continued.)

ADVERTISING CIRCULAR
OF THE
British Journal of Dental Science.

LONDON, JULY, 1883.

THIS Advertising Circular (which from henceforth will be published monthly) is an entirely separate and distinct publication from the "*British Journal of Dental Science*," having nothing whatever in common with it except the general elevation, advancement and good fellowship of the Dental profession.

It is hoped that this Circular, albeit carried out on strictly commercial principles, may become a medium of bringing together the minds, ideas, and experience of Dental practitioners scattered to the remotest corners of the earth.

There are a vast body of practitioners whose interchange of thought is constant, through the instrumentality of the various Dental periodicals, but even these partially resolve themselves into so many small circles, each with its own pet journal as a centre on which its ideas revolve. But apart from these there is probably a still larger body, who, although they occasionally see Dental periodical literature, mainly content themselves by, so to speak, rolling themselves up in their own circumstances, and so becoming, although clever and experienced practitioners, yet isolated members, scarcely giving or receiving aught from their professional brethren.

It is the design of the promoters of this Circular, by its aid, to find these gentlemen out, and induce them, if possible, to add their store of information to the general fund of knowledge, *pro bono publico*, and also by combining as much as possible the information and theories of all journals and schools of thought and practice in this one periodical, and by

scattering it broadcast throughout the universe, to draw together the opinions of all for the common enlightenment.

The promoters are perfectly aware that any attempt to obtain a universal list of subscribers would prove futile, and therefore, by infinite research and much expenditure of time and money, have obtained a list of the names and addresses of just upon 18,000 English speaking Dentists—of whom they have reason to believe there are about 20,000 in existence—and purpose, at all events for a time, to regularly distribute 4,000 to 5,500 copies of this Circular FREE per month, and in rotation, so that in the course of the year every practitioner will repeatedly have current Dental affairs brought under his notice, no matter how far removed he may be from the centres of Science; and the affairs thus, as it were, forced upon his notice, will be of a Cosmopolitan character.

To this unique opportunity for Manufacturers, Dealers, and others, to bring to general notice their specialities and goods BY ADVERTISING, the promoters trust principally to recoup themselves for their outlay, and they have therefore no hesitation in pointing out the unusual advantages that this Circular offers to ADVERTISERS. Certain it is that nothing so universal in its scope has ever been before attempted. Those who advertise in both this Circular and the "*British Journal of Dental Science*," (and who will receive advantageous terms), will have their advertisement displayed in upwards of 7,000 copies per month, or probably 100,000 copies per annum, and repeatedly received by about 20,000 Practitioners.

It is an encouraging sign of the earnest desire of the Authorities, most subject to abuse, to keep the emblem of professional fitness pure and unsullied, to note the resolution of the Council of the Royal College of Surgeons, in Ireland (published elsewhere), with respect to their Licentiates in Dental Surgery advertising their qualifications; and it is not the first time they have shown their determination to uphold the status of their diploma. The Authorities of other Colleges may have yet to look to their laurels.

It is with unalloyed pleasure we note that Sir Edwin

Could you get this article

Saunders has accepted the honour of Knighthood proffered him. It is not alone that we look upon it as a merited recognition of his personal worth, but we feel that descending as it does on one of such liberal and enlightened views, it marks a new era in the annals of the Dental profession. It is a true acknowledgement of our calling as one of the liberal professions, and thus opens up new aspirations to the more ambitious and sanguine amongst practitioners and students, calculated to lend a stimulus to their exertions that can only end in the highest possible attainments of professional knowledge and skill. We heartily congratulate Sir Edwin on being the pioneer of such a distinction, and the profession and ourselves on the borrowed lustre that all will enjoy through the social elevation of one of our most prominent members.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

At a Meeting of the Council, held on April 5th, 1883, the following resolution was passed, viz.:

"That the various licentiates in Dental Surgery of the College, whose advertisements have been or may be brought before the Council by the Inspection Committee, be informed that their advertisements constitute a breach of the undertaking entered into by them with this College; and that, if they be repeated, the Council will be obliged to consider the propriety of cancelling their Dental diplomas."

GELSEMINUM SEMPERVIRENS IN FACIAL NEURALGIA.

DR. SPENCER THOMSON, of Torquay, thus replies to a correspondent in the "Midland Medical Miscellany:"—"My usual dose, unless I have reason to know or believe the patient is very sensitive, is $\mathfrak{m}\text{xx}$, repeating in an hour if there is no relief, and if there is no giddiness or affection of vision, I may give a third dose in four or five hours; but it is rarely required in suitable cases, and I seldom give less than $\mathfrak{m}\text{xv}$. I have found $\mathfrak{m}\text{v}$ relieve in a very sensitive subject. I mention 'suitable cases,' for my own experience has told me that gelseminum has little curative effect in any neuralgic affection but that involving the teeth and alveoli of upper and lower jaw. In such it often acts like a charm."

In the "*British Journal of Dental Science*," under the heading of

"Manipulative Miscellany,"

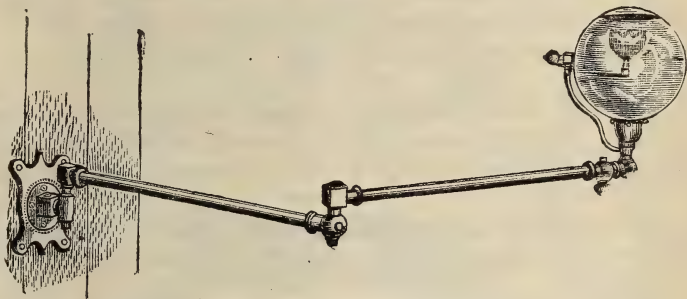
during the current year, have been described, under the conditions, that

"All instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month, they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits, and without any intention or wish to pit one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end,"

the following inventions, viz. :

RUTTERFORD'S GAS GLOBE.

This elegant arrangement, together with the standard form, gives the best possible artificial light for working in the mouth. The light from the gas is magnified, and the rays diverging on their passing from the globe prevent the



casting of the deep and troublesome shadows, incidental to most other systems of artificial lighting. The water used having a slight tinge of blue neutralizes the yellowness of the gas, giving a pure white light.

The Electric Motor for Dental Engine continues to give great satisfaction; it works with great speed, and is not liable to get out of order.

A new Phosphate Cement. A filling introduced by an eminent *dépôt*, which seems to meet all requirements. It, however, has not been long enough before us to speak as to its durability. We understand it is not affected by thermal changes.

Improved Lamp with Reflector. This reflector is of very ingenious construction.

A new Reflector. The chief features being simplicity and efficiency. A well-manufactured article, taking up but little space, and would be found invaluable by those whose practice involve travelling, as it may be applied to any ordinary gas burner.

The Dibble Plugger. It is impossible to conceive one more simple or more efficient than that under notice.

G. Walker's Automatic Gas Extinguisher. This clever apparatus should be considered as a most useful invention, not alone to the profession, but to the laity, and where it is in use Insurance Companies should make a proportionate reduction in their tariff.

Dental Mirror, with Electric Lamp attached. This is a very elegant contrivance, and will meet every requirement.

Dr. R. T. Freeman's Gag. It is evident Dr. Freeman has expended much time in perfecting his gag. In due course its value must be recognized.

The One Flask Vulcanizer noticed is a satisfactory combination of strength and utility. A novel method of adapting the various shades of teeth, likewise commands our approval.

An Improved Tongue-holder. This valuable compressor has but to be more widely known to be more fully appreciated.

Dr. Telschow's Reflector. See our illustration (No. 367) for this valuable adjunct to Dental apparatus.

Baldock's Antiseptic Tooth Dressing. It is sufficient to say that Eucalyptis Oil and Iodoform are the basis of the above dressing, to prove how useful it is.

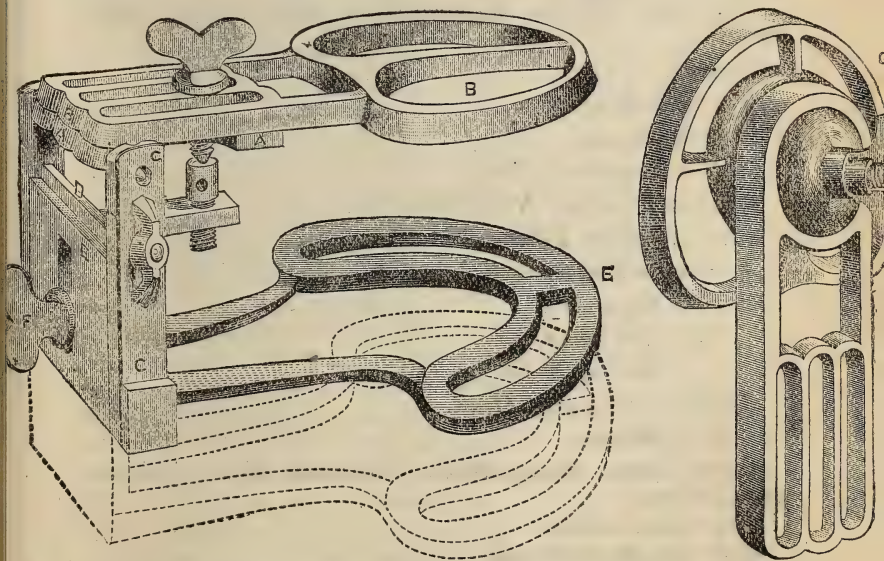
Three very useful new instruments have been sent us for inspection by Mr. H. B. Moseley, of Leeds. They fulfil the intention of the inventor, and cannot fail to give satisfaction.

New Gag and Mirror combined. Whilst lacking complete originality, the ingenuity of the adaptor has done much to perfect an admittedly useful article.

H. D. JUSTI'S NEW ARTICULATOR.

MR. H. D. JUSTI, of Philadelphia, has immensely improved his already fairly perfect articulator, by adding a ball-and-socket attachment to the superior frame, G—the invention of Dr. D. L. Overholser—the utility of which may be readily comprehended.

When the "bite" has been taken for fitting up a set for trial, the models are to be attached to the articulator in the usual manner; should it be thought desirable to raise or depress that "bite" perpendicularly the thumb-screw acting on the slide plate D controls such movements. But it is after the set has been mounted and tried afresh that the chief advantage of this articulator is realised, for should the bite be a little too forward or backward, to the right or left, the thumb-screw on the top admits of any such movements being made by sliding the stage B on the platform A, whilst the thumb-screw on the ball-and-socket admit of any conceivable adjustment of a tilting or tipping nature. Thus by merely loosening these screws any amendment of the articulation can be immediately followed without resetting the models on the frame.



The superior arm hinges or cone points give a perfectly steady motion, and can be readily detached from the remainder of the frame by turning a button on the side spring c c, which enables the one cone point to be lifted out of its socket up a groove made for that purpose.

- Cone Socket Instruments.*
Improved Cone Point and Regulating Handpiece.
Universal Caspador Lamp.
Clamps for use with Bibulous Papers.
New Articulating Paper.
New Disc Guard and Moistener.
Foil Shears and Folder combined.
New Clamps for Back Molars.
Clock to Regulate Time for Vulcanizing.
New Engine Handpiece.
Gold Cohesive Cylinders.
New Dental Cabinet.
A New Articulator.
D'Or's Electric Light.
Improved Rubber Dam Weights.
Globe Reflector.
Fletcher's New Stove for the Ladle.
Buttner's new Method of Pivoting Teeth.
Freeman's Collective Apparatus for Administering Anæsthetics.
Ossilite.
Tin Cylinders.
New Reflector.
A New Impression Tray.
Iridium Platinum Nerve Broaches.
New Amalgam Filling.
Whiting's Atmospheric Discs (Flexible).
A New Expander.
 „ Gas Stove.
 „ Melting Stove.
An Improved Lathe Head.
A New Mirror.
Coffer Dams, Clamp Pliers, combined with Lip-holder and Reflector.
Approximal Files.
New Gas Bottle Stand.
A New Articulator.
The Swinging Dental Chair.
New Mouth Gag.
Phosphate Cement.
Star Rubber Dam Punch.

Literary Notices and Selections.

BROMIDE OF ETHYL, THE MOST PERFECT ANÆSTHETIC FOR SHORT, PAINFUL SURGICAL OPERATIONS.

BY JULIAN J. CHISHOLM, M.D.*

THREE years since, when the Bromide of Ethyl was brought prominently forward as a substitute for chloroform by Dr. R. J. Levis, and Dr. Laurence Turnbull, both of Philadelphia, I, with other surgeons, experimented with the new anæsthetic, with the intent of comparing its reputed advantages with the well-known agents, sulphuric ether and chloroform. I discarded it after a very short trial on account of its apparent inefficiency, and because of the very evanescent nature of the sleep produced by it. I found great difficulty in putting my patients to sleep; and when at last narcotized, they would suddenly recover consciousness at most awkward periods in the midst of eye operations, to my serious annoyance. In two cases especially, in which I continued the inhalation from time to time as I would have done with chloroform, until upwards of an ounce of the bromide of ethyl was used, nausea and vomiting followed, which in its severity and duration, I have rarely seen exceeded in the most sensitive of my chloroform patients. For twenty-four hours the sickness of stomach continued. The hospital ward in which the patients were lying had its atmosphere redolent with the garlicky odour of phosphorus, and the breath of these patients was offensive from the same smell on the day after inhalation. For some months after this very unsatisfactory brief experience my bromide of ethyl bottle remained corked. About this time great publicity was given to a death in the practice of Dr. Marion Sims, from ethyl administration, in which several ounces had been used, and the narcosis kept up for a long period. This was the first time that ethyl had been inhaled for anæsthetic purposes in New York City. This first fatal case was followed soon afterwards by a death under the use of ethyl in the practice of Dr. Levis, of Philadelphia. These two fatal cases put a very sudden stop to the use of bromide of ethyl in the United States.

Confiding in the statements of Drs. Levis and Turnbull, both of them surgeons of large experience, that the bromide of ethyl had good properties, I was still disposed to believe that the new and comparatively unknown anæsthetic possessed attributes which we had not succeeded in developing. I therefore again commenced experimenting cautiously with

this new remedy. By degrees, as I became better acquainted with it, it secured my confidence. For the past year I have used it on an average at least once every day, often administering it four, five or six times, during the day's work, in private practice and at the hospitals. Familiarity with its peculiarities and effects, and the discovery of the proper method of administering it, has taught me to value its advantages more and more highly, till now I consider it *par excellence the anæsthetic* to be used for any painful surgical operation which can be quickly performed. *Having found out how to use it, and what to expect from its administration, I can obtain the most brilliant results from it, and have become quite enthusiastic in its praises.*

(To be continued.)

CORRELATED DISEASES OF THE TEETH AND EAR.

By JOSEPH RICHARDSON, M.D., D.D.S.

WHILE there is, on the part of Dentists, a general recognition of the existence of sympathetic nervous relations between the teeth and other organs or regions more or less remote, it is to be feared that anything like a critical knowledge of the exact nature of this relationship is quite vague and limited. In so far, at least, as the subject under consideration is concerned, there is, it is to be apprehended, a pretty solid substratum of truth in what Dr. Sexton, an eminent aural specialist of New York, has to say of us, namely, that "the apathy which has always existed on the part of the medical profession regarding the teeth has left the treatment of these organs in the hands of men who have occupied themselves almost exclusively with its mechanical department, and who, as a rule, have but little to do with the teeth in a medical aspect," and then laments, "that a field of such interest has been abandoned by the profession."

While we may wince a little under this accusation, it may be as well to accept it as at least a partial statement of the truth, if it will only serve as a stimulus to higher effort in the direction of an increased knowledge on our part of the "medical aspect" of our calling. That we have made some progress, however, in the direction indicated, would appear from the fact that, in a prize essay on this subject, published in the "American Medical Journal," 1880, Dr. Sexton had recourse to Dental authorities for a large part of the pathological data in relation to the diseases of the teeth and gums, which it was necessary for him to employ in elucidation of his subject. Besides, Dentistry as a science is quite young—less than half a century old—while otological science may

be said to date from the time of Du Verney's treatise on the ear, nearly two hundred years ago. It took the medical profession about two centuries to emerge from darkness into light in respect to the true nature of the nervous relationship we are considering. The writer already quoted says:

"The otology of the fathers, indeed, did not include a knowledge of a nervous relationship; and even at the beginning of the present century the writings of Saunders, Saissy, and others, allude to diseases of the teeth as affecting the ears in a manner most meagre, although anomalies of the throat were spoken of as causing deafness; principally, however, as offering a mechanical obstruction to the faucial opening of the Eustachian tubes. Even Toynbee, Wild, Triquet, and their contemporaries, failed to contribute to the knowledge of this subject in any material manner. The important work of clearing up this subject was left to the otologists of the present day, and in turning to our principal writers we find the nervous relationship of the teeth and ears clearly recognised." The evolution of knowledge was slow on this subject, but we accept the results with thanks, and should endeavour to turn them to some practical account in the practice of oral surgery.*

(To be continued.)

THE USE AND ABUSE OF AMALGAM.†

By ALTON HOWARD THOMPSON, D.D.S., Topeka, Kansas.

WHATEVER may be said against amalgam as a filling-material on the score of ethics; however much we may deprecate its extensive and increasing employment, and regret the consequent decadence of high art in the execution of gold operations throughout the profession, the gigantic and stubborn fact remains that its employment for filling teeth is most extensively prevalent, and is on the increase. The presence of amalgam with us is a tremendous fact which we must accept, and accepting must study. It is a great factor in the Dental economy of the day, which cannot be ignored, and we are utterly unable to prohibit its use, even were it as pernicious as some would have us believe.

On purely ethical and artistic grounds, objection is made to amalgam on the score of its being an ignoble, filthy, degrading material, unfit for the touch of the members of a high and noble calling. The protests of the all-gold critics are not aimed so much

* This article appeared in Nos. 371 and 372 of the "*British Journal of Dental Science*."

† Read before the Kansas State Dental Association at Lawrence, Kansas, May 2nd, 1883.

at its practical value and tooth-conserving qualities, as against its plebeian origin and nature. The cry of the golden esthetes is, in fact, a caste prejudice, an ostracism of this Pariah among filling-materials, because of its low pedigree. We are told that no Dentist worthy of the name will use such a degrading material, that it compromises not only his professional but also his personal dignity and purity; that the miserable ease with which it is stuffed into cavities tends only and forever downward, with the result of the rapid depreciation of operative skill, the decadence of art, and the retarding of the cause of the artistic propaganda which was the hope of the masters in operative art. But we are *not* told that we should abandon it because it is worthless practically, that it cannot save teeth, that its conserving quality is a failure. Its practical value to the practitioner stands unchallenged, and therein is its strength, the one cause of its universal use to-day and of its increasing popularity. In point of fact it saves more teeth than any other filling-material, taking teeth of all qualities as they come to the Dentist, and taking all grades of operators as they occur in the ranks of the profession. The poor workman and mediocre operator, who constitute the vast majority of the Dental rank and file, can make better amalgam than gold fillings in all grades of teeth as they meet them in daily practice, and with amalgam they can save more teeth than they possibly could with gold. For this reason amalgam saves more teeth in this country to-day than gold, and is more generally useful.

(To be continued.)

THE SURGICAL TREATMENT OF FACIAL NEURALGIA.

WE understand that Mr. Chavasse's case of excision of Meckel's ganglion and the superior maxillary nerve, is the first operation of the kind performed in the British Isles. In February, 1880, Mr. Walsham stretched the infra-orbital nerve, the patient being a woman, aged 50, subject to intractable neuralgia—a case, in fact, precisely similar to Mr. Chavasse's; it is recorded in an original article, by the operator himself, in the *Journal*, vol. ii., 1880, page 1009. We are informed that this patient has never suffered from any recurrence of the neuralgic pain since the stretching of the infra-orbital nerve; and, also, that before the operation, removal of the sphenopalatine ganglion was proposed. The patient, however, expressly stipulated that she would not consent to any operation being performed, unless first assured that it did not entail the slightest risk to life. Mr. Walsham, moreover, was not strongly in favour of removal of the ganglion; and, it must be borne in mind, that he concludes the article above referred to, by observing that a morbid condition of the sphenopalatine

maxillary ganglion had, at that period, already been suggested as a cause of intractable facial neuralgia; and the ganglion had already been removed several times. It is, however, not improbable, the author added, that as the superior maxillary nerve must be stretched in the operation, the benefit obtained might be traced to the stretching of the nerve rather than to the removal of the ganglion. The fact that both stretching and excision of portions of the second division of the fifth pair of cerebral nerves have been performed more than once shows, at least, that facial neuralgia may resist all palliative treatment, that sufferers from this intractable disease may urgently desire operative interference, and that competent authorities and operators are not quite decided as to the superior merits of one out of two measures. No satisfactory decision will be obtained until many more such operations are performed, with the most scrupulous comparisons of results, as gleaned from histories of the course of the cases for many years after the operations.—*British Medical Journal*.

TWO DEATHS FROM CHLOROFORM.

WE find in local papers, of which copies have been kindly forwarded to us, reports of two deaths this week from chloroform inhaled as an anæsthetic. One of the daughters of Mr. Hutcheson, Chief Magistrate at Turriff, Aberdeenshire, suffered greatly from the toothache, and was compelled to have an operation performed. Notwithstanding this, the pain continued, and to alleviate her sufferings she procured some chloroform and put it in a handkerchief and applied it to her mouth. Subsequently she retired to her bedroom, and as she did not reappear it was hoped she had obtained relief. The next morning she was found dead on the floor. Deceased was only twenty, and was a great favourite in the district. A millworker, named Margaret Houston, seventeen years of age, and residing at Penicuik, died while under the influence of chloroform, administered to her by Dr. Kennedy, of Penicuik. She had gone to Dr. Kennedy to get three teeth extracted, and insisted, against his advice, on being put under chloroform during the operation. We would again express the anxious wish that practitioners in whose practice such cases occur, and under whose professional attention they come, should take an early opportunity of getting the clinical facts of the case on record in our paper for the purpose of the general information of the profession, in furtherance of our accurate knowledge of the circumstances under which anæsthetics of all varieties prove fatal. This is, we think, an incumbent duty.—*Ibid*.

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THE DENTAL HOSPITAL OF LONDON.

THE Annual Distribution of Prizes to the Students of the Dental Hospital of London took place on the evening of Monday, the 2nd inst., in the large Ball Room of Willis' Rooms, Mr. CHRISTOPHER HEATH, F.R.C.S., Consulting Surgeon to the Hospital, in the chair.

After a little introductory music, the DEAN (Mr. Ken Underwood), read the report.

The CHAIRMAN then proceeded to deliver his address, for which see p. 4.

Mr. GREGSON then briefly proposed a vote of thanks to the Chairman, saying that although many eminent men had presided on these occasions in previous years, no one had ever occupied that position whose name was better known to, and respected by, all ranks of the profession than Mr. Christopher Heath.

The motion having been carried with much applause, Mr. Heath replied. The musical programme was then resumed and most successfully carried out.

TRANSACTIONS OF THE STUDENTS' SOCIETY OF THE DENTAL HOSPITAL OF LONDON.

ORDINARY GENERAL MEETING HELD JUNE 11TH, 1883.

C. D. DAVIS, Esq., Vice-President, in the Chair.

THE minutes of the previous meeting were read and confirmed.

Messrs. Smith, Pedley, Brown and Hellier having been proposed at the previous meeting, were unanimously elected members of the Society.

The following gentlemen were proposed as members: Messrs. W. England, Lloyd, Williams, G. G. Campion and S. Peall. Mr. T. G. Read by Mr. Paterson.

Casual communications were brought forward by Mr. THOMSON, who showed good models of supernumerary teeth.

Mr. STAINER showed a lower molar with a mass of a peculiar horny substance situated between the fangs.

Mr. PATERSON presented models of a supernumerary tooth, and made some remarks relative to the position of the teeth.

The VICE-PRESIDENT then called on Mr. Baldwin to read his paper on "Saliva," which was illustrated by experiment, which will be found on another page.

A vote of thanks was accorded to Mr. Baldwin for his paper, and the meeting was then adjourned; the Vice-President announcing that there would be one held in July, at which Mr. Fox was expected to read a paper.

On the 19th inst., the Council of the Royal College of Surgeons, in Ireland, elected from among the Fellows an Examiner for the diploma in Dental Surgery. The vacancy having arisen in consequence of the death of Mr. B. Wills Richardson.

WE are requested to state that the American Dental Society of Europe will hold its eleventh Annual Meeting at Cologne, beginning Tuesday, August 7th, at 10 o'clock.

DEMONSTRATION ON CONTINUOUS GUM FACINGS.

It is with pleasure we notice that very considerable interest is being taken in Mr. Verrier's process of this pretty work, and his simple but efficient gas furnace.

We are informed that at his recent demonstration at the Dental Manufacturing Co.'s offices, on May 7th, considerably over a hundred gentlemen were present, many of whom had travelled very long distances, and that the two hours' demonstration was most interesting and satisfactory, Mr. Verrier having been enabled to fire four cases within that short time, and great was the appreciation expressed by those who witnessed it.

The interest displayed in Mr. Verrier's process and gas furnace for this beautiful work seems in nowise abating. His demonstration at Messrs. C. Ash and Sons' establishment on June 4th, was witnessed by some eighty gentlemen who had travelled from all parts of the country. The general feeling was that of surprise at the facility with which Mr. Verrier packed, soldered, fired, or gum-enamelled, in all five pieces of continuous gum facing work in less than two hours, with almost total absence of heat and without dirt, a feat that may be appreciated.

Notwithstanding the admirable arrangements made by Messrs. C. Ash and Sons for the convenience of those present, their very numbers prevented the watching the minutiae of the work, that the more interested desired.

Mr. A. B. Verrier purposes giving a practical demonstration of his process of manufacturing Continuous Gum Facings with his Gas Furnace, at Cotterell's Dental Dépôt, Rodney Street, Liverpool, on August 9th prox.*

APPOINTMENTS.

Mr. J. O. BUTCHER, L.D.S., has been appointed House Surgeon to the Dental Hospital of London, *vice* W. F. Cornelius, L.D.S., resigned. Mr. H. L. Pillin, Assistant House Surgeon.

* A full description of Mr. Verrier's process will be found in Nos. 361, 363, and 365 of the "*British Journal of Dental Science*" of this year.

FRANK A. HUET, Esq., L.D.S., of Manchester, has been appointed Honorary Dental Surgeon to the Northern Counties Hospital for Incurables, Manchester.

Mr. J. McKINO ACKLAND, L.D.S. Eng., has been appointed Dental Surgeon to the Dental Hospital of Exeter, *vice* Mr. Augustus King, L.D.S., resigned.

VACANCY.

DENTAL HOSPITAL, LEICESTER SQUARE.—Lecturer on Anatomy and Physiology to the above Institution. Applications on or before Oct. 7th, 1883, to the Dean, J. Francis Ken Underwood.

Correspondence.

[We do not hold ourselves responsible for the opinions expressed by our Correspondents.]

AMALGAMS.

To the Editor of the "British Journal of Dental Science."

Your correspondent "Cranbrook" states: "There is undoubtedly a slight shrinkage in any material in which mercury is used." It is evident from this statement that his experience has been extremely limited, and that he has not read the results of experiments which have been repeatedly published in the Journal. These experiments have been repeated by so many independent and reliable observers, both here and in America, that it is strange to see anyone writing with apparent authority making such a statement. The expansion of certain amalgams has been repeatedly tested and measured, and it is known to be considerable in, for example, precipitated silver and mercury. The statement would be correct if revised to read, "There is undoubtedly a slight shrinkage in any material in which mercury is used, *except* those which are free from shrinkage, and those which expand." With this "trifling" alteration the statement would be correct.

Yours, &c.,

THOS. FLETCHER.

ANSWERS TO CORRESPONDENTS

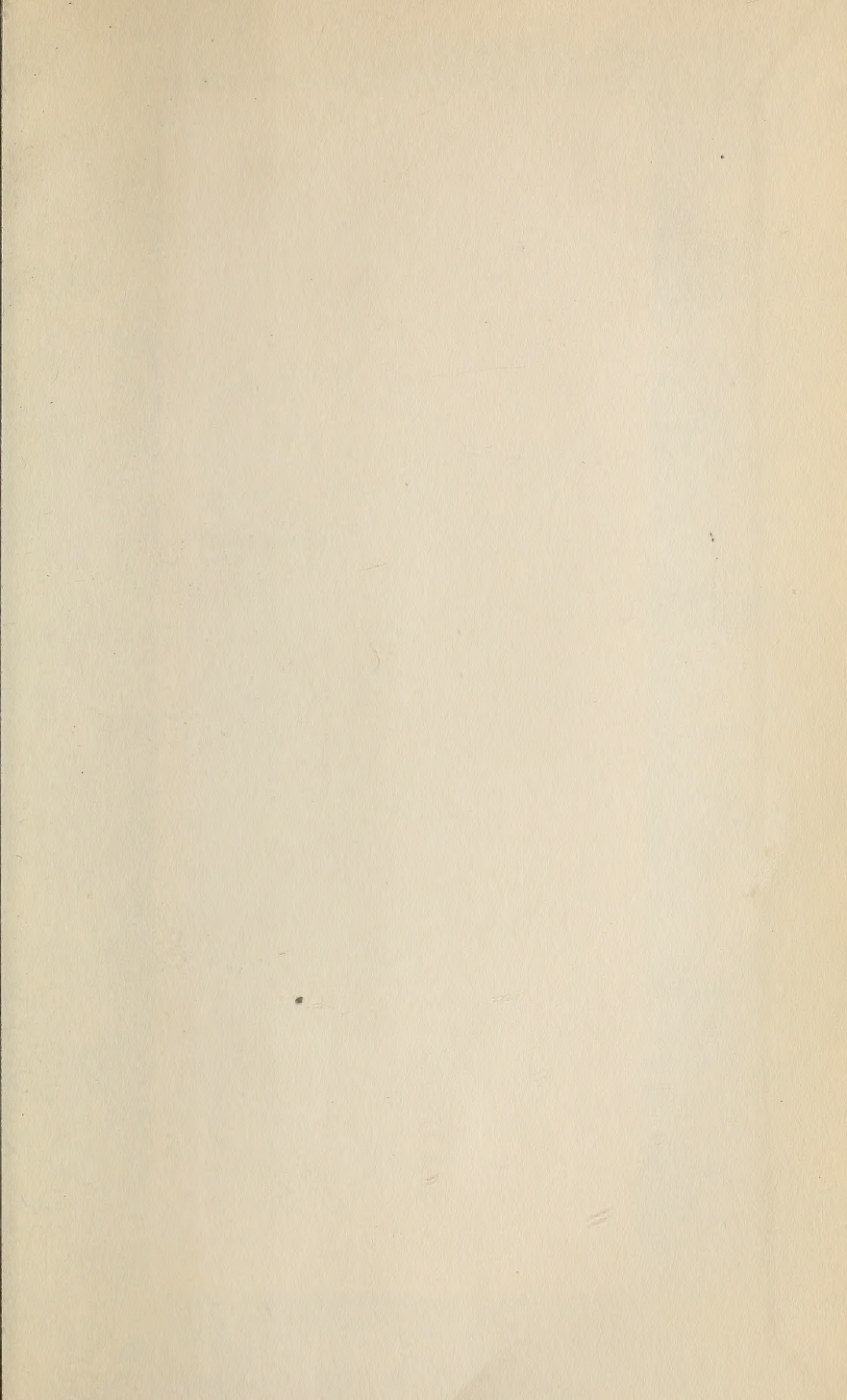
Will be given freely and honestly as occasion requires.

LETTERS AND COMMUNICATIONS RECEIVED

Will, we hope, be a prominent feature in this Circular, and, provided they are temperate in tone, all shades and grades of opinion will be equally welcome.

BOOKS, &c., RECEIVED,

Will be fully appreciated, promptly acknowledged, and have the fullest attention that their intrinsic worth may suggest.



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British Journal of Dental Science. v.26(1883)

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